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(54) Title: METHODS AND APPARATUSES FOR ELECTRONIC BIDDING SYSTEMS			
(57) Abstract A system, method and apparatus aggregates buyer client needs and anonymously presents these needs to one or more vendor clients to request quotes. According to one embodiment (see Fig. 1), buyer clients [14A and 14B] present quote requests which may be binding to an intermediary [12]. The intermediary aggregates these buyer client quote requests in order to receive enhanced terms from vendor clients [16A and 16B]. The identity of the aggregated buyer client may remain anonymous. Individual buyer clients may initiate a quote request, which will be posted anonymously to allow other buyer clients to join in, or the intermediary can post regular quote requests based on an optimization of the preferences of the buyer client community and the demand based on prior trades. Several other embodiments are identified which provide variations of the system, method and apparatus to optimize it for particular user needs.			

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METHODS AND APPARATUSES FOR ELECTRONIC BIDDING SYSTEMS

This a continuation of US Provisional Patent Application Number 60/161,789, entitled "Method and Apparatus for Implementing Pooling Of Buyers And Vendors Based On Lots", filed 10/27/99, a continuation of US Provisional Patent Application number 60/158,582, entitled "Method and Apparatus for Implementing Preferential Selection of Offers", filed 10/7/99, a continuation of US Non-provisional Patent Application number 09/410,490, entitled "Method And Apparatus For Aggregating Multiple Purchase Requests In An Open Market Network", filed 9/30/99 a continuation of US Non-provisional Patent Application number 09/409,836, entitled "Method And Apparatus For Aggregating Vendor Sales Bids In An Open Market Network", filed 9/30/99, and a continuation of US Provisional Patent Application Number 60/121,458, entitled "Method and Apparatus for Aggregating Multiple Buyers to Obtain Quotations from Selected Groups of Multiple Vendors and for Optimizing Purchases for a Maximum Number of Buyers", filed February 24, 1999.

FIELD OF THE INVENTION

The present invention relates to electronic sales applications using electronic networks.

BACKGROUND

The advent of the Internet and electronic processing of orders have spawned many schemes for electronically linking buyers to vendors, creating electronically mediated auctions, bid-ask systems and other electronic business transactions.

The business models so far have been to optimize the bidding or auction between one vendor of a specific product and several potential buyers. In one business approach, a third party internet company, like OnSale, offers, for sale by auction, surplus products from established manufacturers. EBay offers a

similar approach to consumers trying to sell to other consumers' collectible or used products. In another business approach, manufacturing or distribution companies, like Ingram, use auction software on their own web sites to allow purchase of excess inventory to only a selected group of clients, thereby protecting their traditional channels of distribution.

Stephen J. Brown (US 5,794,219) describes a method of conducting an on-line auction with bid pooling in which registered bidders can aggregate their bids into a specific group to bid together for a specific auction item electronically and remotely through a series of computers hooked to an internet. Each bid contains a designation of the group to which the bid should be added. Bids that then aggregate to the highest amount for given auction items win the bid. The system is geared toward auctions of well-known art works and the likes in which bidding groups are widely used.

In another approach, a buyer posts a price at which he would buy a service and the vendors can accept or reject the offer. Jay Walker et al. (US 5,794,207) (later Priceline.com) describes a commercial network system designed to facilitate buyer-driven conditional purchases. In this system, a buyer makes a binding bid electronically, which is then transmitted to vendors who have the opportunity to accept or reject an offer. This is an electronic version of a virtually identical business model promoted by an earlier company on which several press reports were published. (Laura Del Rosso, "Marketel Says it Plans to Launch Air Fare 'Auction' in June" *Travel Weekly*, April 29, 1991 and Jeff Pelling, "Travelers Bidding on Airline Tickets: SF Firm Offers Chance for Cut-rate Fares", *San Francisco Chronicle*, Section A4, Aug. 19, 1991). This system clearly depends upon a bid on a product or service by a specific individual buyer, who then secures his order at his bid price by providing a credit card authorization. The bid is then broadcast electronically to multiple vendors who can choose to either accept or reject the bid. The patent goes on to teach

algorithms, forms, data networks, financial authorization systems, encryption and internet configurations to accommodate this business model.

Finally Joseph Giovannoli (US 5,758,328) describes a computerized quotation system in which a network of buyers and a network of vendors is contained in a processing unit. Individual buyers submit requests for quotes with certain characteristics, such as time of delivery, quality, etc. Based on the characteristics and information contained about the vendors, the computer selects and broadcasts the request for quotes to appropriate vendors who then respond. Vendor responses that meet the quote characteristics are passed either directly to the buyer or into a database to which the buyer has access. The buyer then completes a chosen transaction.

In a completely different paradigm, driven by the need to compete against larger rivals, small business have banded together to form buyers' groups in which buyers aggregate their demand in order to achieve better pricing. Perhaps best known of these is the group of hospitals which band together demand in order to obtain hospital chain volume and pricing from medical products companies. Such Group Purchasing Organizations (GPOs) combine buyers needs for an agreed series of products, present the request for quote to a limited number of approved providers in the group, and theoretically receive better prices for higher volume commitment than their individual members could obtain. However, the GPOs often lack the clout they need with the vendors because the buyers, who often prefer branded products or services from specific suppliers, are not obligated to buy from the GPOs selected vendor.

While all of the above systems greatly enhance the fluidity with which buyers and vendors can come together in various ways, agree on price, and conclude a transaction, they do not provide the opportunity for individual buyers to collaborate as a group to aggregate their demand and obtain lower prices. They furthermore generally depend upon the need for unbranded products on which several vendors can quote. Many products, for example medical

instruments, are defined more by service quality, doctor preferences, and other complex product traits that are difficult to reflect in hard specifications.

SUMMARY OF THE INVENTION

According to one embodiment of, electronic aggregation of multiple buyers needs, presentation of the aggregate buyers needs anonymously to one or more vendors to request quotes, and optimization of numerous selling terms to the maximum benefit of the buyers is provided. In one such embodiment, buyers requests are aggregated in order to receive enhanced business terms. An intermediary electronically aggregates and transmits binding multiple buyers' commitments in the form of quote requests to buy specified products (e.g., branded or commodity) or services to one or more vendors. In one such embodiment, the identity of the group of buyers remains anonymous without compromising quality, service, preferred vendors or other value considerations. A specific buyer may initiate a quote request that gets posted anonymously to allow other buyers to join in or the intermediary can post regular quote requests based on an optimization of the preferences of the buyers' community and the demand based on prior trades. In one embodiment, the intermediary is "trusted" (e.g., known to both the buyers and the sellers). Further, the intermediary may have entered into legally binding agreements with the buyers and/or the sellers requiring them to complete sales transactions entered into using the system.

In one such embodiment, quotes are optimized to match all of an individual buyer's preferences in order to achieve a lowest price bid for the largest volume of purchased product. Further, communication between the intermediary and the buyer regarding the economics of changing certain preferences (e.g., quality levels, acceptable vendors, etc.), and between the intermediary and the vendor providing price bid versus volume committed information to the vendor can be provided. It should be understood that the term

product as used herein is defined to include something that is sold; as such, the term product can include a physical item(s), a service(s), or both.

According to another embodiment, an open market network transaction method is disclosed. The method comprises establishing a set of criteria, receiving a plurality of buyer purchase requests, and aggregating the plurality of buyer purchase requests based upon the set of criteria to form a set of sub-pool requests. In addition, bids to supply the set of sub-pool requests are received and processed in order to optimize the criteria set by buyers and vendor(s). This information is then distributed.

According to another embodiment, an open market network transaction method is disclosed. The method comprises establishing a set of criteria, receiving a plurality of buyer purchase requests, and excluding one or more buyer purchase requests based upon the set of criteria to form a set of sub-pool requests. In addition, bids to supply the set of sub-pool requests are received and processed in order to optimize the criteria set by buyer(s) and vendors. This information is then distributed.

According to another embodiment, a method and system for selecting a winning bid in an auction is described. In this embodiment, a buyer provides a preference criteria for a buyer purchase interest. The buyer receives bids from vendors bidding for the buyer purchase interest. The vendors' bids include a first bid from a first vendor and a second bid from a second vendor. The second bid is better than the first bid. By applying the buyer's preferential criteria, the first bid is selected as the winning bid over the second bid.

According to another embodiment, a method and system for selecting a winning bid in an auction is described. In this embodiment, input is received from a first buyer and a second buyer. The input individually identifies a buyer purchase interest from each of the buyers. The buyer purchase interest includes one or more different items, each of the items representing a specific product or a product type. The buyer purchase interest from the first buyer and the second

buyer indicate the one or more items that the buyer desires to purchase. A first vendor and a second vendor offer bids to supply one or more different items identified by the buyer purchase interests from the first buyer and from the second buyer. The bids from the first vendor and the second vendor are matched to the buyer purchase interest from the first buyer and the second buyer.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of one embodiment of an open market network;

Figure 2 is a block diagram of one embodiment of the intermediary server 12 from Figure 1;

Figure 3 is a flow diagram of one embodiment of the operation of an open market sales transaction;

Figure 4A is a flow diagram of one embodiment of a request for future trade process;

Figure 4B is a flow diagram of one embodiment of a buyer pooling process;

Figure 4C is one embodiment of a table illustrating the type of information stored during an exemplary trade;

Figure 5A is a flow diagram of one embodiment of a process for combining multiple request for quote;

Figure 5B is one embodiment of a table illustrating the type of information stored after a combined request for quote;

Figure 5C is one embodiment of a graphical representation of a vendor trade curve;

Figure 6A is a flow diagram of one embodiment of a vendor pooling process;

Figure 6B is one embodiment of a table illustrating the type of information stored after the vendor pooling phase;

Figure 6C illustrates one embodiment of tier pricing entered by a vendor;

Figure 6D is one embodiment of a graphical representation of a vendor trade curve combined with tier pricing;

Figure 7A is part of a flow diagram of one embodiment of bidding state generations;

Figure 7B is the remainder of the flow diagram of bidding state generations;

Figure 7C illustrates the initial satisfaction status of the buyers during a bidding state;

Figure 7D illustrates a working winning pool that fails;

Figure 7E illustrates the satisfaction status of the buyers after the processing for the working winning pool of **Figure 7D** is complete;

Figure 7F illustrates a working winning pool that succeeds;

Figure 7G illustrates the satisfaction status of the buyers after the processing for the working winning pool of **Figure 7F** is complete;

Figure 7H illustrates a second working winning pool that succeeds;

Figure 7I illustrates the satisfaction status of the buyers after the processing for the working winning pool of **Figure 7H** is complete;

Figure 7J illustrates the current bidding state;

Figure 8 is a flow diagram of the close trade phase at process block 390;

Figure 9A-9H illustrate exemplary screen snapshots of exemplary pages displayed at buyer clients; and

Figure 10A-10I illustrate exemplary screen snapshots of exemplary pages displayed at vendor clients;

Figure 11 illustrates a flow diagram of actions involved in one embodiment of a method or one embodiment of an apparatus for implementing preferential selection of offers;

Figure 12A provides a more detailed explanation of one embodiment of the invention;

Figure 12B provides an alternative more detailed explanation of one embodiment of the invention;

Figures 13A illustrates part of a flow diagram of one embodiment of bidding state generations that allows for vendor price differentials as preferred result criteria;

Figures 13B illustrates the remainder of a flow diagram of one embodiment of bidding state generations that allows for vendor price differentials as preferred result criteria;

Figure 14 illustrates a representation of an exemplary data structure useful for pooling buyer(s) and seller(s) based on lots according to one embodiment of the invention;

Figure 15 illustrates a simple example of the data structure of **Figure 14** according to one embodiment of the invention;

Figure 16 illustrates further correspondences between portions of the data structure of **Figure 14** in the example of **Figure 15** according to one embodiment of the invention;

Figure 17 illustrates another example of a catalog hierarchy for batteries;

Figure 18A illustrates part of a flow diagram of one embodiment of bidding state generations that allows for a lot trade;

Figure 18B illustrates another part of a flow diagram of one embodiment of bidding state generations that allows for a lot trade;

Figure 18C illustrates another part of a flow diagram of one embodiment of bidding state generations that allows for a lot trade;

Figures 19A and 19B illustrate compatibility structures according to one embodiment of the invention.

Figure 20A illustrates part of a flow diagram of another embodiment of bidding state generations that allows for a lot trade;

Figure 20B illustrates another part of a flow diagram of another embodiment of bidding state generations that allows for a lot trade;

Figure 20C illustrates another part of a flow diagram of another embodiment of bidding state generations that allows for a lot trade.

DETAILED DESCRIPTION

In the following description, numerous details are set forth. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form, rather than in detail, in order to avoid obscuring the present invention.

Unless specifically stated otherwise as apparent from the following discussion, it is appreciated that throughout the description, discussions utilizing terms such as "processing" or "computing" or "calculating" or "determining" or "displaying" or the like, refer to the action and processes of a computer system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system's registers and memories into other data similarly represented as physical quantities within the computer system memories or registers or other such information storage, transmission or display devices.

The present invention also relates to apparatus for performing the operations herein. This apparatus may be specially constructed for the required purposes, or it may comprise a general-purpose computer selectively activated or reconfigured by a computer program stored in the computer. Such a computer program may be stored and/or transmitted in a computer readable storage medium, such as, but is not limited to, any type of read only memory (ROM); random access memory (RAM); magnetic disk storage media; optical storage media; flash memory devices; electrical, optical, acoustical or other form of propagated signals (e.g., carrier waves, infrared signals, digital signals, etc.); etc.

The flow diagrams and displays presented herein are not inherently related to any particular computer or other apparatus. Various general-purpose

systems may be used with programs in accordance with the teachings herein, or it may prove convenient to construct more specialized apparatus to perform the required methods. The required structure for a variety of these systems will appear from the description below. In addition, the present invention is not described with reference to any particular programming language. It will be appreciated that a variety of programming languages may be used to implement the teachings of the invention as described herein.

The instructions of the programming language(s) may be executed by one or more processing devices (e.g., processors, controllers, central processing units (CPUs), execution cores, etc.).

Overview

According to one embodiment, methods, systems, databases, electronic networks, and other hardware and software which allow electronic aggregation of multiple buyers needs, presentation of the aggregate buyers needs anonymously to one or more vendors to request quotes, and optimization of numerous selling terms to the maximum benefit of the buyers are provided.

According to a further embodiment, buyers requests are aggregated in order to receive enhanced business terms. Such aggregation enables the group of buyers to accept an arrangement that is superior than they would otherwise receive if they were negotiating individually. In one embodiment, the identity of the group of buyers remains anonymous without compromising quality, service, preferred vendors or other value considerations.

An intermediary electronically aggregates and transmits binding multiple buyers' commitments in the form of quote requests to buy specified products (e.g., branded or commodity) or services to one or more vendors. A specific buyer may initiate a quote request that gets posted anonymously to allow other buyers to join in or the intermediary can post regular quote requests based on an optimization of the preferences of the buyers' community and the demand based on prior trades. In one embodiment, the intermediary is "trusted" (e.g., known to

both the buyers and the sellers). Further, the intermediary may have entered into legally binding agreements with the buyers and/or the sellers requiring them to complete sales transactions entered into using the system.

In a further embodiment, quotes are optimized to match all of an individual buyer's preferences in order to achieve a lowest price bid for the largest volume of purchased product. Further, communication between the intermediary and the buyer regarding the economics of changing certain preferences (e.g., quality levels, acceptable vendors, etc.), and between the intermediary and the vendor providing price bid versus volume committed information to the vendor can be provided. It should be understood that the term product as used herein is defined to include something that is sold; As such, the term product can include a physical item(s), a service(s), or both. It should also be understood that the exemplary screen shots are included to illustrate one manner of implementing the inventions. As such, various alternative screen layouts are within the scope of the inventions.

Further Description

Figure 1 is a block diagram of one embodiment of an open market network 1. The open market network includes a network 10, an intermediary server 12, buyer clients 14A and 14B, and vendor clients 16A and 16B. In one embodiment, network 10 comprises the Internet. However, in other embodiments, network 10 is not limited to the Internet. The teachings disclosed herein might be applied to various networks, data and document storage and archival facilities, or other types of client/server systems that have documents or other information available upon request.

According to one embodiment, intermediary server 12 is coupled to network 10 and is able to respond to requests from buyer clients 14 and vendor clients 16 via network 10. In one embodiment, the received requests are associated with the Internet (or World Wide Web (the WWW)). In such an

embodiment, intermediary server 12 acts as a WWW server. That is, clients are directly coupled to a local area network (LAN) or wide area network (WAN) and "serve" data, such as images or other multi-media objects that they capture or create to intermediary server 12.

Further, intermediary server 12 establishes certain sales terms (e.g., price) and optionally executes the sales transactions between buyer clients 14 and vendor clients 16 as will be described in more detail below. In one embodiment, intermediary server 12 uses a hypertext transfer protocol ("HTTP") to communicate over network 10 with the clients; such clients also communicate with intermediary server 12 using the hypertext transfer protocol. Thus, intermediary server 12 and these clients act as an HTTP server and HTTP clients respectively.

Buyer clients 14 communicate with intermediary server 12 via network 10. According to one embodiment, buyer clients 14 include a program (e.g., a browser) that permits users to access documents over network 10 that are located on intermediary server 12. In one embodiment, users at buyer clients 14A and 14B transmit requests to intermediary server 12 that include requests to purchase various products and services. Vendor clients 16 also include a browser that permits users to access documents that are located on intermediary server 12 via network 10. Users at vendor clients 16A and 16B transmit requests to intermediary server 12 that include requests to supply the requests of users at buyer clients 14A and 14B.

The clients in the system will typically include a client processor and a memory and a computer readable medium, such as a magnetic or optical mass storage device, and the computer readable medium of the client contains computer program instructions for receiving data from intermediary server 12 and for storing the data at the client. One of ordinary skill in the art will appreciate that additional buyer and vendor clients may be coupled to network 10.

Figure 2 is a block diagram of one embodiment of an intermediary server 12. Intermediary server 12 includes buyer database 101, vendor database 102, products database 103, an open trade database 104 and order database 105. Although databases 101 – 105 have been described as separate databases, one of ordinary skill in the art will appreciate that databases 101 – 105 may be implemented as a single database. In addition, intermediary server 12 includes a buyer module 112 coupled to buyer database 101, a products selector module 113 coupled to products database 103, and a vendor module 114 coupled to vendor database 102 and products database 103. Further, a request module 115 is coupled to vendor database 102, products database 103 and open trade database 104; an trade module 116 is coupled to open trade database 104; and an order module 117 is coupled to order database 105.

Buyer module 112 qualifies and manages potential buyers based on a list of criteria stored in buyer database 101. According to one embodiment, buyer database 101 includes company information, and a list of users and related passwords for persons authorized to use intermediary server 12. In one embodiment, a qualified buyer at a buyer client 14 may enter the system via a buyer web portal that is customized for each buyer. The customized page may display small windows of information and hyperlinks such the exemplary ones illustrated in **Figures 9A – 9H**. In such an embodiment, a user at a buyer client 14 may log on to intermediary server 12 by entering a user name and a password on the browser in order to access information. **Figure 9A** illustrates an exemplary screen snapshot of an exemplary login page displayed at buyer clients 14.

Product selector module 113 manages product database 103. According to one embodiment, product selector 113 lists products and/or services by one or more criteria, such as category, description, related vendor, interested buyers, etc. Users at buyer clients 14 may record their qualified list of vendors by products or services based on their own experience and/or available

characteristics. In addition, buyer client 14 users may enter feedback to be shared with other buyers on their experiences with these vendors. In one embodiment, such feedback will create a vendor rating based on several criteria such as quality, time delivery, service, product effectiveness and safety. The acceptable list of vendors may also be created automatically by the system based on previous trade activities. The notification of future trades may be based on each buyer's selection of specific categories and products.

Vendor module 114 manages vendors' information stored in the vendor database 102. In addition, vendor module 114 may be configured to provide a list of products or services offered by the vendors as stored in product database 103. In one embodiment, a vendor at vendor client 16 may enter the system via a vendor web portal that is customized for each vendor. The customized page may display small windows of information and hyperlinks about subjects such as the exemplary ones illustrated in **Figures 10A – 10H**. In such an embodiment, a user at a vendor client 16 may log on to intermediary server 12 by entering a user name and a password on the browser in order to access information. **Figure 10A** illustrates an exemplary screen snapshot of an exemplary login page displayed at vendor clients 16.

According to one embodiment, request module 115 posts notifications of future trades on each buyer client 14 in order to request qualified buyers to submit their request for quote by a certain date. A future trade notification may describe a particular product or service, the list of all vendors, the timing of the delivery (e.g., by a certain date, over a period of time, etc.), and other related terms.

Figure 9D illustrates an exemplary screen snapshot of an exemplary purchase request page displayed at a buyer client 14. As shown in **Figure 9D**, a purchase request page is filled out by buyers at buyer clients 14. According to one embodiment, a buyer is committed to purchase the requested volume for the traded product if any vendor out of the selected group of acceptable vendors at

various vendor clients 16 provide a quote below a maximum price set by the buyer. Of course, in alternative embodiments of the invention, the agreed upon terms may be used for other purposes (e.g., the agreed upon terms may form a memorandum of understanding according to which the parties agree to make their best efforts to agree on the necessary remaining terms to complete the transaction). The transaction price may be a unit purchase price. Alternatively, the transaction price may be a total purchase price that may include additional costs such as installation charge and service fee. The buyer request page allows a buyer to quickly update an acceptable vendor list by displaying the list of all vendors offering a particular product, previously selected vendors, the last bid price by these vendors, a buyers community rating hyperlink and previous comments entered by the buyer.

According to a further embodiment, request module 115 aggregates all of the volume of the buyers by group of acceptable vendors into open trade database 104 upon closing the request for committed orders. In addition, request module 115 posts Request for Quote (RFQ) at each selected vendor client 16. In one embodiment, the RFQ indicates, for each product, the total quantity being requested, the quantity that the specific vendors have been selected for, the delivery timing and the anonymous profile of the group of buyers. The profile may include data on different terms requested (e.g., shipping and geographical location). The RFQ may also request additional information (e.g., different pricing breakdown between purchasing the products, installing the products, servicing the products, etc.). The RFQ will specify a time by which the vendors must respond.

Trade module 116 manages and posts the trade status on the applicable buyer clients 14 and vendor clients 16. According to one embodiment, the trade is implemented in a format that shows each vendor the potential order volume it will receive with the existing price quote as compared to the maximum volume from all the buyers to whom the vendor is acceptable. In addition, the total

volume of the trade may be displayed to the vendor. **Figures 10E and 10F** illustrate exemplary screen snapshots of exemplary pages received at a vendor client 16 respectively displaying trades in an open phase (trades that have not entered the vendor pooling phase and/or the vendor has not yet bid on) and in an active phase.

Vendors may lower their bid price based on the received information during the trade period. The process may be based on a non-disclosed maximum price set by each buyer and their list of acceptable vendors. This type of trade may also be displayed to each buyer indicating the lowest quoted price from the group of qualified vendors as well as the lowest price outside that group. **Figures 9E and 9F** illustrate exemplary screen snapshots of exemplary pages received at buyer clients 14 displaying trade information for active trade(s). According to one embodiment, a buyer may decide during the open trade to add another vendor to their qualified list if that vendor has a lower quoted price.

In addition, trade module 116 closes the trade at the expiration of an allotted period of time. In addition, trade module 116 may verify whether the quotes from vendors of acceptable products are below the maximum price requested by each buyer, and select a vendor with a product with the lowest price for each group of buyers. Further, trade module 116 may electronically notify the buyers and vendors of the outcome of the trade and post the results at respective buyer clients 14 and vendor clients 16.

Alternatively, other auction formats may be used. For instance, a progressive auction format may be used that awards the orders at different prices depending on the quantity level bid by each buyer. In a progressive auction, for example, the lowest bidder is awarded the aggregated volume at a final bid price after the auction is closed. In addition, higher quantity buyers may receive an additional discount from the final bid price while lower quantity buyers could be charged a compensating premium over the final bid price.

Order module 117 manages order database 105 and its contracts with the chosen vendors and successful buyers. According to one embodiment, an order status is posted at the respective buyer clients 14 and vendor clients 16. Although intermediary server 12 has been described with respect to a particular embodiment, one of ordinary skill in the art will appreciate that intermediary server 12 may be configured using various other techniques.

Various database architectures (object oriented database(s), relational database(s), hybrid of object oriented/relational database(s), etc.), combined or separately, can be used to implement the invention. For example, one skilled in the art may choose to employ a multi-tier architecture design, by designing a system with a Web Server System, to be connected to an Application Server System, which in turn connects to a Database System. The system can be implemented using a variety of techniques, including well-known techniques. For example, the intermediary server 12 may include an automated network router, such as Cisco's™ Local Director, coupled to a set of application servers (such as IBM's™ WebSphere, Netscape™ Fastrack, or Apache), coupled to an database system (e.g., Oracle®) that may include a set of database servers coupled to a persistent data store (e.g., a set of disk arrays).

More particularly, according to one embodiment the application servers would include business logic and remote business objects. The business logic may be implemented in a variety of different languages (e.g., Java, C++, C application program interface (C API), etc.). The remote business objects may include vendor, buyer, item, bid, and trade objects. The remote business objects may be implemented using a variety of different techniques (e.g., as object/relational mapping, Enterprise JavaBeans, Common Object Request Broker Architecture (CORBA) objects, etc.).

In addition, the database servers would include data access components and a distributed access manager. The data access components may be provided in a variety of different products (e.g., TopLink, RogueWave, Oracle JBOs, etc.)

using a variety of different languages (e.g., Java, C++, C API, etc.). The distributed access manager may be provided in a variety of different products (e.g., Tuxedo, RMI, Visigenix, Iona, BEA, etc.) and implemented using a variety of different techniques (e.g., as object/relational mapping, Enterprise JavaBeans, CORBA objects, etc.).

The persistent data store may include vendor/buyer profiles, product catalogs, system registration and trades information. Further, the persistent data store may be implemented in a variety of different products (Oracle, Sybase, Informix, Gemstone, Centura, ODI ObjectStore, etc.) using a number of different structures (e.g., a database, flatfile, memory based system, file system, etc.).

Of course, the above-described implementations are for exemplary purposes. As such, there are various other ways in which the described embodiments can be implemented that are all within the scope of the inventions disclosed herein.

Figure 3 is a flow diagram of one embodiment of the operation of an open market sales transaction. At process block 310, a request for a future trade is initiated. In one embodiment, a buyer client 14 and/or the intermediary server 12 may initiate trades (for example, the intermediary server may initiate a trade automatically at periodically scheduled periods, at the suggestion of one or more vendors, etc.). Trades initiated by intermediary server 12 may be initiated at predetermined intervals (e.g., weekly, monthly, quarterly, etc.). In such an embodiment, intermediary server 12 automatically sets up the time period for pooling and trading based on product categories.

Figure 4A is a flow diagram of one embodiment of the request for trade process (block 310) when initiated by a buyer. **Figure 4A** will be described with reference to **Figure 4C**. **Figure 4C** is one embodiment of a table illustrating the type of information stored during the request for future trade (block 310) and

buyer pooling phase (block 310) for an exemplary trade. The information shown in Figure 4C would be stored in the database(s) of the intermediary server.

In block 410 of Figure 4A, product information is entered by a user at a buyer client 14 and transmitted to intermediary server 12. For example, a user at buyer client 14 may select a product type (or category) from a list or select a particular product from a list of products (in which case, the intermediary server identifies the product type/category) stored in products database 103. All the products in the selected product category are relatively equivalent and/or perform relatively the same function. Products may be listed by product name or by a "virtual kit list." A list of products may be aggregated as a virtual kit list of similar products to be provided by the same vendor (i.e. different shapes of surgical instruments or accessories attached to specific capital equipment).

At process block 430, the general terms and conditions for the trade is entered by the user at buyer client 14. This information includes the quantity and a maximum price the buyer is willing to pay for the product. According to one embodiment, the maximum price corresponds to a unit acquisition price (e.g., unit, box of 50, box of 100, etc.). Alternatively, the maximum price may include an installation price and/or a service price (e.g., \$50/month for 60 months for capital equipment). Also, this information may include prices for related accessories and/or disposables whose function is later described herein.

In one embodiment, the system will calculate the total maximum price per unit based on the pricing components provided. For example, assume that the disposables for different products of a given product type have different life spans/numbers of uses. In one embodiment, a given buyer may enter a projection of use (e.g., time, number of uses, etc.) and a max disposable cost for that projection. From that projection, the number of disposables required may be later calculated for each product (this later calculation allows for the normalization of different products into a single equivalent). These

individualized buyer pricing components are then combined with the unit acquisition price to form the maximum price.

In other situations, buyers may not wish to and/or be unable to make such projections. In these situations, various techniques can be used, such as: 1) the max cost for a single "virtual" disposable may be entered and used; 2) a particular product's disposable (either by bundle or singles) may be selected and a max acceptable cost entered (from this information, the disposables for different products may be normalized); 3) the max cost for a single virtual disposable and the assumed life expectancy/number of uses expected may be entered (from this assumed life expectancy/number of uses, the number of disposables required may be later calculated for each product); etc.

In an alternative embodiment, certain and/or all of the pricing components beyond the unit acquisition price (e.g., the installation, service, accessories, disposables, etc.) are kept separately and/or combined into one or more sets. The information is then later used to exclude products that do not satisfy these criteria.

In addition, the general terms and conditions may include "characteristics", for example, delivery period/timing (e.g., time start, time end, frequency of shipment), freight, a trade ID number generated by intermediary 12, and a request date (e.g., date generated by the system to allow buyers to enter their data), shipping terms (e.g., net 30 days, 60 days, 90 days, Q1, Q2, etc.), direct shipment or distributor, shipment locations, etc.

Referring to Figure 4C, exemplary terms and conditions are shown. It is assumed in this example, that buyer 1 initiated the trade for 500 items of a product type that includes products 1-4 from vendors 1-3 at a max price of \$16 per item. In Figure 4C it is also shown that buyer 1 has characteristics of requiring shipment to CA and delivery in Q1.

In block 435 of Figure 4A, the intermediary server 12 selects the products of the selected product type that are provided by vendors for which the buyer is

not automatically excluded. In particular, vendors may have previously entered criteria which buyers must satisfy in order to be eligible to select their products. For example, in Figure 4C vendor 3 has previously indicated that it will not ship to Texas. However, since buyer 1 has designated shipment to California, buyer 1 is not excluded from considering vendor 3's available products that are of the selected product type.

In block 440 of Figure 4A, the buyer is provided a list of the selected products and identifies the ones the buyer finds acceptable for the trade. According to one embodiment, product ratings are stored in vendor database 102 by vendor and are displayed to buyers by product categories. In addition, product ratings may be organized by product number or categories. With reference to Figure 4C, the table illustrates with "Y"s that buyer 1 identified products 1-3 as acceptable and with an "N" that product 4 is not acceptable.

At block 445 of Figure 4A, a new trade is posted. Figure 9B illustrates an exemplary screen snapshot received at a buyer client 14 displaying information on trades that have not yet entered the buyer pooling phase and/or on which the buyer has not entered the pool. Figure 9D illustrates an exemplary screen snapshot received at a buyer client 14 during a request for future trade and/or during a buyer pooling phase.

In the situation where the intermediary server generates the request for future trade, the blocks in Figure 4A differ. In particular, the blocks 430-440 need no be performed. Rather, the intermediary server selects the product type (block 410) based on some criteria (e.g., historical data, surpluses, etc.) and posts the trade (block 445).

Referring back to Figure 3, a buyer pooling phase is commenced after the new trade is posted (block 320). Figure 4B is a flow diagram of one embodiment of the buyer pooling phase. At process block 450, it is determined whether a buyer at another buyer client 14 wishes to join the trade. If another buyer wishes to join the trade, the buyer enters the buyer's general terms and

conditions (460). In block 465, of Figure 4A, the intermediary server 12 selects the products of the selected product type that are provided by vendors for which the buyer is not automatically excluded. Again, in Figure 4C shows that vendor 3 has previously indicated that it will not ship to Texas. Since buyer 2 requires shipment to Texas, buyer 2 is excluded from considering vendor 3's available products that are of the selected product type. This is shown in Figure 4C by the "N"s under vendor 3 in the row for buyer 2.

In block 470 of Figure 4A, the buyer is provided a list of the selected products and identifies the ones the buyer finds acceptable for the trade. With reference to Figure 4C, the table illustrates with a "Y" that buyer 2 identified product 2 as acceptable and with an "N" that product 1 is not acceptable.

At process block 480, the update to the trade is posted.

At process block 490, it is determined whether the time allotted for buyer pooling has expired. According to one embodiment, the time allotted for buyer pooling is one week. However, one of ordinary skill in the art will appreciate that other time intervals (e.g., one day, one month) may be implemented. If time has not expired, control is returned to process block 450 where it is determined whether another buyer wants to join the trade. If no buyer wants to join the trade, control is again returned to process block 460 where it is determined whether the allotted buyer pooling time has expired. Once the time has expired, the buyer pooling phase is closed. Referring again to Figure 4C, a matrix has been formed showing with "Y"s and "N"s which products are acceptable to which buyers.

It should be noted that the products 1-4 may be the same products provided by different distributors and/or may be different products designated to be equivalent. For example, the products 1-3 may be gloves manufactured by company X and sold by vendors 1-3, while the product 4 may be gloves manufacture by company Y and sold by vendor 3. As another example, the products 1-2 may be different ventilators manufactured and sold by vendors 1-2,

the product 3 may be the same ventilator as product 2 but distributed by vendor 3, and the product 4 may be a ventilator manufactured by a different company and distributed by vendor 3.

The disposable costs characteristic enables a buyer to establish a maximum price at which the buyer will pay for disposable items that operate with the product. For example, a buyer of printers may limit the prices at which the buyer will pay for printer cartridges to be used with the printer. One of ordinary skill in the art will recognize that other buyer characteristics may be included in the table and vendors may exclude trade based on those characteristics. **Figure 9C** illustrates an exemplary screen snapshot received at a buyer client 14 displaying information on trades in the buyer pooling phase that the buyer has joined.

Referring back to **Figure 3**, a combined request for quote is generated after the closing of the buyer pooling phase (process block 330). **Figure 5A** is a flow diagram of one embodiment of the process for combining multiple request for quote (block 330). **Figure 5A** will be described with reference to **Figure 5B**. **Figure 5B** is one embodiment of a table illustrating the type of information stored after the combined request for quote.

At process block 520, a product is selected. At process block 530, the total quantity of the selected product qualified to supply is stored as the pool quantity for that product. With reference to **Figure 5B**, the column for product 1 shows that product 1 is acceptable to buyers 1 and 3. As such, from the total quantity entered for all the buyers (2300), the amount of that quantity that could be supplied with product 1 is 1500. Hence, the pool quantity for product 1 is shown in the table as 1500. It should be noted that the vendor 3 supplying products 3 and 4 has a total pool quantity of 1500 for product 3 based upon requests from buyers 1 and 2 (there is a pool quantity of 0 for product 4 because of the lack of acceptance of that product by any of the buyers).

At process block 540 of Figure 5A, a buyer characteristic is selected. At process block 550, the vendor's pool is separated into sub-pools. According to one embodiment, the sub-pools correspond to subsets of the pool quantity that have the same value for a particular characteristic. At process block 560, the sub-pools are stored as a profile for the particular characteristic.

Referring again to Figure 5B, the quantities are further broken down into profiles based upon various other characteristics (e.g., geographic and timing). For example, the column for product 2 shows that since buyers 1 and 3 require shipment to California and buyer 2 requires shipment to Texas, the pool quantity of 2300 is broken down in the geography profile as 1500 units for California and 800 for Texas. There is a similar break down for timing.

At process block 570, it is determined whether all of the buyer characteristics have been processed. If all of the characteristics have not been processed, control is returned to process block 540 where another characteristic is processed. Otherwise, it is determined whether all of the products have been processed (process block 580). If all of the products have not been processed, control is returned to process block 520 where another products is selected. If all of the products have been processed, each vendor is notified of their respective pool quantity and profiles (process block 590).

Figure 5C is one embodiment of a graphical representation of a vendor trade curve. The vendor trade curve indicates the minimum prices a vendor must bid in order to gain the opportunity to supply one or more buyers. Using the table in Figure 5B for example, a vendor must bid no higher than \$16 in order to sell 500 units, \$15 to sell 1300 units and \$14 to sell 2300 units.

Referring back to Figure 3, a vendor pooling phase is commenced after generating the combined request for quote (process block 340). Figure 6A is a flow diagram of one embodiment of the vendor pooling process. At process block 605, it is determined whether any vendor wishing to submit a bid. If so, control passes to block 610. Otherwise, control passes to block 640.

At process block 610, one or more manual trade exclusions may be entered by a vendor at a vendor client 16. A manual trade exclusion operates the same as an automatic trade exclusion, with the exception that automatic trade exclusion are for somewhat permanent preferences of a vendor that were previously stored.

At process block 620, tier pricing may be entered by a vendor. At process block 630, a maximum quantity is entered. Figure 10D is an exemplary screen snapshot received by a vendor client during the initial bid of the vendor.

Figure 6B is one embodiment of a table illustrating the type of information stored after the vendor pooling phase. The table is updated to reflect manual exclusions entered by vendors selling the products. For example, vendor 1 excludes orders in Q2, and thereby excludes buyer 3 as a possible buyer of product 1 based upon the timing of the order. As a result, vendor 1's pool quantity and profiles are recalculated to reflect the exclusion. It should be noted that the automatic and manual exclusions are not buyer specific. Rather, in one embodiment, the vendors are not informed of which buyers are involved in the combined request for quote (the buyer's anonymity is preserved). As such, the automatic and manual trade exclusions are based upon the characteristics of the buyers. The table also includes an entry for the tier pricing of each product vendor.

Figure 6C illustrates one embodiment of tier pricing entered by a vendor. A vendor may enter an initial bid for each tier quantity pricing range determined by the vendor in which the vendor has a product that is acceptable. In addition, the vendor may enter a maximum quantity of the product which the vendor can supply. In certain embodiments, a vendor may also enter other price component information (similar to that discussed above – e.g., a service price, installation price, related accessories prices, disposables price, etc.) in addition to a price for each unit to be sold. As described, above, in certain embodiments the system will calculate the total bid price per unit based on the provided price components

by each vendor. Furthermore, as described above, this may involve the normalization of components, such as disposables. Of course, in embodiments in which this information is kept separately or in sets (as described above), separate calculations would be performed as necessary.

Figure 6D is one embodiment of a graphical representation of a vendor trade curve combined with tier pricing. Note that the vendor's pricing tiers are only acceptable for the 1000-2000 range since the prices for the other tiers are higher than the maximum commitment prices. **Figure 10B** illustrates an exemplary screen snapshot received at a vendor client 16 illustrating trades that have not yet entered the vendor pooling phase and/or that the vendor has not entered a bid on. **Figure 10C** illustrates an exemplary screen snapshot which may be received at a vendor client 16 displaying information regarding a vendor's subpool.

Referring back to **Figure 3**, a current bidding state is generated after the vendor pooling phase (process block 350). **Figure 7A** and **7B** illustrate a flow diagram of one embodiment of bidding state generations.

Referring to **Figure 7A**, a sort according to a predetermined order criteria of buyer entries is implemented at process block 700. In addition, a sort according to the lowest product bid is carried out, with a vendor order criteria used to break ties. The criteria for the buyer and vendor can take a number of different forms. For example, the criteria for the buyers and or vendors may be the order of entry into the pool, the order of largest to smallest quantity, the order of smallest to largest quantity, an order based on number and/or volume of past trading, etc.

At process block 705, the lowest bid based upon the sort is selected. At process block 710, a new working winning pool is started. At this point, a working winning pool represents a scratch area for calculating a pool of buyers for which a given bid qualifies. As described later herein, a working winning

group may succeed or fail. Working winning groups that fail are dumped, whereas those that succeed represent the current bidding state.

At process block 715, a first unsatisfied buyer is selected. An unsatisfied buyer is one that has not already been matched with a particular product to supply the buyer's request.

At process block 720, it is determined whether the product corresponding with the lowest bid is acceptable for the selected unsatisfied buyer. If the product is not acceptable, it is determined whether there are more unsatisfied buyers to process at process block 740.

If the product is acceptable, it is determined whether the selected bid price is less than the buyer's maximum commitment price (process block 725). According to one embodiment, it may also be determined whether the price for disposable items to be sold with the product is below or equal to what the buyer is willing to pay. If the bid price is greater than the buyer's maximum price, control again passes to process block 740. However, if the bid price is less than the buyer's maximum price, it is determined whether the sum of the working quantity and buyer's quantity is less than or equal to the vendor's maximum quantity illustrated in Figure 6C (process block 730). The working quantity is the running total amount of units of a given winning working group. Thus, when a new winning working group is started, the working quantity is zero.

If the combination of the working quantity and buyer's quantity is greater than the vendor's maximum quantity, control again passes to process block 740. If the combination of the working quantity and buyer's quantity is less than or equal to the vendor's maximum quantity, the buyer and the buyer's quantity is added to the working winning pool.

At process block 740, it is determined whether there are more unsatisfied buyers that have not been considered for the currently selected bid. If there are more buyers, the next unsatisfied buyer is selected at process block 745 and control is returned to process block 720.

Referring to **Figure 7B**, if there are no more unsatisfied buyers that have not been considered for the currently selected bid, it is determined whether the working quantity is greater than or equal to the minimum quantity for the pricing tier at process block 750. If the working quantity is less the minimum pricing for the pricing tier, the working winning pool is cleared and the next lowest bid is selected at process block 770. As a result, control is returned to process block 715 where a first unsatisfied buyer according to the sort is again selected. Although it is not illustrated in **Figure 7B**, if there is not another bid to be selected from in block 770, the current working winning pool would be deleted and control would pass to block 360.

If it was determined in block 750 that the working quantity is greater than or equal to the minimum pricing for the pricing tier, the product bid is won by the vendor (process block 755). Once a bid is won by a vendor, buyers in the current winning pool are marked as satisfied and the current working winning pool becomes part of the current bidding state. From block 755, control passes to block 760.

At process block 760, it is determined whether there are any unsatisfied buyers remaining. If there are no more unsatisfied buyers remaining, the current bidding state is completed and control passes to block 360. Otherwise, the next lowest bid is selected at process block 765 and control is passed back to block 710. Although it is not illustrated in **Figure 7B**, if there is not another bid to be selected from in block 765, control would instead pass to block 360.

Figures 7C-J illustrate an example of bidding state generation with respect to the values included in the table of **Figure 6B** and maximum quantities and bid pricing tiers in **Figure 6C**. To show certain features of the invention, this example assumes that the bids for each product are the same. However, it is understood that this need not and will not likely be the case. In addition, it is assumed in this example that the buyers 1-3 orders were received in respective order, and the vendor 1-3 bids were received in respective order.

Figure 7C illustrates the satisfaction status of the buyers at the beginning of the bidding state. Thus, **Figure 7C** illustrates that none of the buyers have yet been satisfied.

To begin, the lowest bid is selected in block 705. The lowest bid is \$13.90 in the third price tier. Since all of the vendors 1-3 bid the same amounts for the same pricing tiers, the vendor order criteria is used to break the tie. In this example, the vendor order criteria is the order of entry into the pool. Since in this example vendor 1 was the first to submit a bid, the bid based on product one is the first bid selected. Notice that there are no bids for product 4 due to unacceptability and exclusions.

Next, a winning pool is started. Subsequently, the first unsatisfied buyer is selected. In this example, the buyer order criteria is the order of entry into the pool; thus, buyer 1 is selected (block 715). Since product 1 is acceptable to buyer 1, the product 1 bid price is compared to Buyer 1's maximum commitment price (\$16) (block 725). Since the bid price is less than the maximum price, and the working quantity (0) plus buyer 1's (500) quantity is less than the maximum quantity for product 1 (1500 from **Figure 6C**), buyer 1 and the quantity of 500 is added to the working winning pool (block 735). **Figure 7D** illustrates a current status of the working winning pool.

Next, buyer 2 is selected as the next unsatisfied buyer (blocks 740 and 745). However, since the table indicates that product 1 is not acceptable to buyer 2 (block 720), another buyer is to be selected (block 745). Similarly, buyer 3 has been excluded by the vendor 1; thus another buyer is to be selected. Since there are no more buyers to be selected, the working quantity in the working winning pool (500) for product 1 is compared to the minimum quantity for pricing tier in **Figure 6C** (1000) (block 750). Since the working quantity for the vendor 1 in the working winning pool (500) is less than the minimum quantity for pricing tier 3 (1000), the working winning pool is cleared and the next lowest bid is selected

(block 770). **Figure 7E** illustrates the satisfaction status of the buyers after the product 1 bid of \$13.90 has been processed.

The \$13.90 bid of product 2 in bid pricing tier 3 is next selected as the lowest bid, a new working pool is started, and buyer 1 is selected (block 705 – 715). The process described in blocks 725 – 740 above with respect to product 1 for buyer 1 is repeated for product 2. However, product 2 is also acceptable to buyer 2 (block 720). Since the bid price (\$13.90) is less than buyer 2's maximum price (\$15) and working quantity (500 from buyer 1) + buyer 2's quantity (800) is less than the maximum quantity (1500) for the vendor 2, buyer 2 and the buyer 2's quantity is added to the working winning pool (blocks 725 – 735). **Figure 7F** illustrates the current status of the working winning pool after buyer 2 is added for product 2.

since product 2 is also acceptable to buyer 3 and the bid price is less than buyer 3's maximum price (\$14), the process in blocks 720 and 725 is repeated for buyer 3. However, since the working quantity for the current working winning pool (1300 from buyers 1 and 2) + buyer 3's quantity (1000) is greater than the maximum quantity (1500) for vendor 2, buyer 3 cannot be added to the working winning pool (block 730). Further, since there are no more buyers to be selected, and the working quantity for product 2 (1300) is greater than the minimum quantity for pricing tier 3 (1000), vendor 2 wins the bid and buyers 1 and 2 are marked as satisfied (blocks 740 - 750). **Figure 7G** illustrates the satisfaction status of the buyers after the \$13.90 product 2 bid has been processed.

Since buyer 3 is still unsatisfied, blocks 710 – 755 are repeated with the next lowest bid, which is the \$13.90 bid of product 3 for the third pricing tier. The process ends with buyer 3 being satisfied. **Figure 7H** illustrates the current status of the working winning pool after buyer 3 is added for product 3. **Figure 7I** illustrates the satisfaction status of the buyers after the \$13.90 product 3 bid

has been processed. Note that all buyers have been satisfied. **Figure 7J** illustrates the current bidding state.

One of ordinary skill in the art will appreciate that the above example is only one scenario of the current bid state generation. For example, Figures 7A and B show a method by which the working winning groups are filled according to the ordering based on the buyer criteria is shown. Alternative embodiments could use other techniques (e.g., a best fit algorithm – the buyers to fill a given bid would be selected to have the maximum quantity).

Referring back to **Figure 3**, the current bidding state is distributed to the buyers and vendors after the current bidding state generation (process block 360). As can be seen from the above, the pool quantity does not have to be, and at times is expected not to be, satisfiable by one product/vendor. Rather, the pool quantity is broken down by product into potentially overlapping subpools based on the individual selection of acceptable products by the buyers. The subpool for a given vendor's product(s) will appear during the real time bidding as a single "virtual buyer." It should also be noted that these individual subpools for the different products are interrelated based upon the buyer/product matrix (see the example shown in **Figure 6B**).

The first pass through process blocks 350 and 360 may be referred to as generating an initial bidding state. At process block 370, it is determined whether a new bid is received from a vendor before an allotted time for bidding has expired. If a new bid is received, control is returned to process block 350 where another bidding state is generated. In addition to or in lieu of generating new bid states responsive to each bid, alternative embodiments can be implemented to generate new bid states responsive to other criteria (e.g., in one embodiment, new bids are collected during regular time intervals after which a new bidding state is generated and posted to participating vendors and buyers).

If no new bid has been received, it is determined whether the allotted time has expired (process block 380). According to one embodiment, one week

is allotted for bidding by vendors. However, other periods of time (e.g., one day, one month, etc.) may be allotted for the bidding. If the time has not expired, control is returned to process block 370 where it is determined whether a new bid has been received. If the allotted time has expired, the trade is closed at process block 390. Successive passes from process blocks 350 through 380 may be referred to as the real time bidding phase. **Figures 9E and 9F** illustrate exemplary screen snapshots received at a buyer client 14 displaying information during an active real time bidding phase. **Figures 10F and 10G** illustrate exemplary screen snapshots received at a vendor client 16 displaying trades in an active real time bidding phase. In particular, Figure 10G illustrates to the vendor how much of its subpool it is currently winning based on its current bids (i.e., since the subpools can overlap, the bids of vendors are interrelated; as such, bid changes by other vendors during the real time bidding can effect part of all of other vendors subpools based on the buyer/vendor matrix). In this manner, real time feedback is provided to the vendor's regarding their status.

Figure 8 is a flow diagram of the close trade phase at process block 390. At process block 810, notification is transmitted from intermediary server 12 to each buyer at buyer clients 14. At process block 820, transaction information is transmitted to the buyers. At process block 830, notification is transmitted from intermediary server 12 to each vendor at vendor clients 16. At process block 840, transaction information is transmitted to the vendors. At process block 850, a sales invoice is transmitted to each vendor and/or buyer. In one embodiment, a sales invoice is charged only to the specific vendors who won a trade pool after the close trade phase. **Figures 9G and 9H** illustrate exemplary screen snapshots received at a buyer client 14 displaying information during a closing phase. In particular, Figure 9H reveals the identity of the anonymous winning vendors. It should be noted that this is the first time a buyer knows what of his selected vendors was winning the bid, and the buyer only learns the identify of the vendor that won their bid (whether other vendors won bids and/or bid at all remains

anonymous). Furthermore, a given buyer never learns the identity of any of the other participating buyers.

Figure 10H illustrates an exemplary screen snapshot received at a vendor client 16 displaying information during a closing phase. Figure 10I illustrates an exemplary screen snapshots received at a vendor client displaying information about a specific trade; in particular, the identity of the anonymous winning buyers is provided. It should be noted that this is the first time a vendor knows who any of the buyers were, and the vendor only learns the identify of the buyers they have won (the buyers that the vendor did not win remain anonymous).

By pooling orders, maintaining buyer's preferences, communicating volume/pricing tradeoffs to vendors, the current invention creates the opportunity to optimize the price obtained by the entire pool of buyers in the aggregate. In addition, more purchasing power is provided to buyers and more lower-cost and larger volume sales to the vendors.

It should be understood that several inventions have been described above. Each of these inventions has been used independently of the other. For example, one invention is the concept of pooling the buyers according to a buyer/vendor matrix. Once the buyers are pooled, the system could be designed to handle the matching of bids to buyers any number of different ways (e.g., one such system could require that only vendors that can satisfy their entire subpools can participate; one such system could require that only vendors that can satisfy the entire pool can participate; rather than supporting real time bidding, another such system could allow for each vendor to submit only a fixed number of bids (e.g., only one); another such system could provide the combined request for quote to only one vendor; etc.).

Another invention is the concept of normalizing products in the buyer pooling environment. For example, this can occur: as a result of the way the products are stored by product type in the database, the way the buyers can select

which products they are willing to accept, the way the other pricing components are normalized, etc.

Yet another invention is the concept of having the combined request for quote broken down into subpools by product, where the subpools for different products may or may not overlap different buyers and where the subpools are bid on by the corresponding vendors. Alternative embodiments may require that only the products that are acceptable to all of the buyers be allowed to be in the combined request for proposal.

Regardless of how the request for quote is generated, another invention is the manner of handling vendor pooling. For example, one invention is the concept of having subpools for different products and providing real time bidding on the vendor's on their respective subpools. In addition, an aspect of the invention is the concept of providing to the vendor's real time information regarding their status with respect to their subpool (e.g., how much of their subpool(s) they are capturing at their current bid(s)). Again alternative embodiments, could allow for a fixed number of bids (e.g., two). As another example, a system can provide that only a single buyer submits a request for quote and the vendor pooling is performed. In such a system, the subpools could be formed based on various criteria (e.g., the characteristics - if the single buyer needs products shipped to different locations, different timing, etc.). While different degrees of anonymity have been described, it is understood that other degrees of anonymity could be used.

Yet another invention is a method and apparatus for implementing preferential selection of offers. While a pooling system for matching buyer(s) and seller(s) has been described, many methods of matching buyer(s) and seller(s) are known (see e.g. Background of the Invention). The use of preferential selection of offers may be used in any such system.

Most of the matching techniques have a method of entering prices or other criteria. For example, in reverse auction systems it is not uncommon to

have a buyer indicate a desired product and a maximum price the buyer will pay for the desired product. Likewise, many methods exist for receiving bids or offers to purchase or sell a product. In particular, bids may be made after a request for bids is received or otherwise entered or communicated. Standing bids may be entered prior to or subsequent to receiving requests for bids, and those bids may be used either for a limited time, until a limited quantity of products are matched to the bid, or in an unlimited manner.

In many instances, a buyer may be seeking a low price for any product in a transaction, but be willing to pay a slightly higher price for a preferred result of a transaction, such as the purchase of one preferred product in preference to another (such products may be sold by the same vendor or different vendors), or the purchase of a product from one vendor in preference to another, the purchase of a product with a preferred feature (e.g. a direct flight over a non-direct flight for an airline ticket), etc. Implementing such a preferential selection of offers to purchase or sell may be done in the following manner.

Figure 11 illustrates a flow diagram of actions involved in one embodiment of a method or one embodiment of an apparatus for implementing preferential selection of offers. Prior to these actions, a buyer or seller will have entered a set of criteria about the transaction, such as a product type to be purchased, a maximum purchase price, and a preferred result for the transaction. Additionally, some form of bids will have been received from a corresponding vendor or customer, or set of vendors or set of customers, indicating what purchase price is acceptable (and possibly indicating other terms such as delivery time or maximum quantity). In this particular illustration, a desired purchase by a buyer has been entered and a set of bids from a set of vendors have been received. The criteria of a preferred result to the transaction have also been entered.

At block 1110, the bids are processed, with the lowest bid identified. In one embodiment, such processing involves sorting the bids according to price,

but this may alternatively be achieved using any acceptable technique (e.g. by examining each bid and keeping track of the lowest price among the bids examined until all bids have been examined).

At block 1120, bids which meet the criteria specified by the buyer as necessary for a preferred result are identified. In one embodiment, the criteria include what percentage above the low bid the buyer is willing to pay for a specified result. However, the criteria may take many forms, including but not limited to a percentage premium or discount, or a difference specified in monetary units from the low result, etc.

Having identified both the lowest bid and any bids relating to a preferred result of the transaction, the bids are presented at block 1130. Block 1130 may take a variety of forms within the spirit and scope of the present invention. For example, in one embodiment, the bid which satisfies the criteria leading to a preferred result of the transaction, or the lowest bid if no bid satisfies the criteria for a preferred result is presented to the buyer as the bid. Furthermore, in an alternative embodiment, such a bid is presented to the buyer as an offer for sale or acceptance of the buyer's offer to buy the product in question.

Alternative embodiments employ other implementations of Present Bid(s) 1130. In one embodiment, all bids received which satisfy the buyer's request for bids may be presented to the buyer. In an alternative embodiment, the lowest bid and the lowest bid which satisfies the criteria for a preferred result of the transaction may be presented to the buyer. Furthermore, in another alternative embodiment, the lowest bid and all bids which satisfy the criteria for a preferred result of the transaction may be presented to the buyer. In each of these three embodiments, the buyer may then choose which bid to accept, and the embodiments may also allow the buyer to cancel the transaction, or wait for more bids if appropriate.

With attention to Figure 12A, a more detailed explanation of one embodiment of the invention may be presented. In Figure 12A, a buyer has

indicated a desire to purchase a product. The buyer has also indicated a willingness to pay a first extra percentage for a product from T, a second extra percentage for a product from S, and a third extra percentage for a product from W. Bids for sale of the product to the buyer have been received from five vendors, S, T, U, W, and X, wherein the bid from X is the lowest and the bid from W is the highest. The bracket labeled T illustrates how far above the bid from X an acceptable price from T may be based on the first extra percentage. Likewise, the bracket labeled S illustrates how far above the bid from X an acceptable price from S may be based on the second extra percentage, and the bracket labeled W illustrates how far above the bid from X an acceptable price from W may be based on the second extra percentage. Calculation of these brackets exemplifies one partial implementation of block 1120.

In this example, both the bid from T and the bid from S satisfy the criteria for a preferred result of the transaction, and identification of these bids completes the implementation of Identification 1120. In one embodiment, the bid from S is presented as the winning bid. In an alternative embodiment, the bid from S and the bid from X are presented as the best results. In yet another alternative embodiment, the bids from X, S, and T are all presented to the buyer, and finally, in another alternative embodiment, all five bids are presented to the buyer. All of these presentations may be implementations of Present Bid(s) 1130.

As will be appreciated, a percentage as criteria for a preferred result may also be used in relation to the price of bids submitted by preferred vendors, as illustrated in Figure 12B. In Figure 12B, the same bids used in Figure 12A are plotted, but the percentages are based on the bid price of the preferred vendor; so a first percentage of vendor T's price is used, a second percentage of vendor S's price is used, and a third percentage of vendor W's price is used. The brackets of Figure 12B illustrate both a percentage above and a percentage below the appropriate price, and the criteria for a preferred result will be satisfied if the lowest price of the bids falls within those brackets. As will be appreciated, when

the buyer is receiving bids for a product to be bought, the lower end of the bracket is most suitable for determining fulfillment of the criteria for a preferred result. However, if some form of auction by a seller were occurring, the top half of the bracket may indicate that the seller would choose to sell to S for a lower bid price than that received from W, since W is at the end of the bracket for S. Such a choice may indicate a long-standing relationship with S or some sort of right-of-first-refusal held by S.

As previously described, a percentage is not the only means of indicating a tolerance for a different price from a preferred vendor or buyer. An offset, either a discount or a premium, may be used, in which case a buyer or seller would enter a number specifying how much more or less in actual currency the bid may be to meet the criteria of a preferred result. Additionally, in some embodiments, a tie-breaking method of awarding a sale to the first vendor to submit a winning bid is used, and specifying a willingness to pay 0% more for a product from a first vendor may ensure that if the first vendor offers to sell the product at the low price that it will be chosen even though another vendor offered the same low price first.

It will be further appreciated that other criteria besides price may be used to indicate a preferred result. For example, features deemed desirable but not necessary in otherwise similar products may be used, either in conjunction with or instead of a preferred price. If the buyer is purchasing tickets for air travel, the buyer may specify non-stop flights, or flights through a desired stopover point as preferred results, without allowing for a higher price. Likewise, the buyer may specify any flight from San Francisco to New York for \$300, but allow an extra 15% for a flight on a particular airlines.

While embodiments have been described in which preferred criteria have been used, it should be appreciated that the invention includes the use of unpreferred result criteria. For example, for an unpreferred vendor, buyer could enter a differential with which they would prefer a different vendor, such as

allowing for an extra 15% for a flight which was not on a particular airlines. It should be apparent that this result criteria concept also works for selecting slightly lower bids in a traditional (non-reverse) auction (e.g., a dutch auction, a straight auction, etc.) Thus, the invention works in any bidding system and the preferred result criteria for buyers, sellers, and/or both.

Having described the concept and several implementations of preferred offer criteria, an exemplary implementation of preferred result criteria as integrated into the pooling system previously described will now be discussed. While the described implementation allows a price differential to be entered for one vendor, alternative embodiments can allow different preferred result criteria (as described above), price differential(s) for more than one vendor, price differentials per product, etc.

With reference to blocks 435 and 465 of Figures 4A-B, in one embodiment of the invention a buyer would be able to additionally enter a price differential for one vendor. This is illustrated in Figure 9D under the label of premium pricing. As described below, these price differentials are used during generation of the current bidding state.

Figures 13A-B illustrate a flow diagram of one embodiment of bidding state generations that allows for vendor price differentials as preferred result criteria. The flow diagram of Figures 13A-B is similar to the flow diagram of Figures 7A-B. In particular, blocks 1300 -1305, 1315-1330, 1335-1360- 1365 are generally the same as the corresponding blocks in Figures 7A-B, and therefore only the differences will be discussed here.

One such difference is that control returns only to block 1310 via the circled A, as opposed to returning to both of blocks 710 and 715 (respectively through the circled A and B) in Figures 7A. In Figure 7A, control would return to block 1310 rather than 1315 when the current working winning pool was successful, rather than cleared and overwritten. In Figure 13A-B, block 1355 has been modified to indicate that the information from the working winning pool is

kept and block 1310 is used to indicate that another working winning pool is formed (whether it be a new structure or a prior structure that is cleared).

Another such difference is that control passes from block 1330 (compare block 730) to a new block 1332. When block 1332 is reached, it has been determined that the current buyer could be satisfied in the current working winning group, assuming that the current working winning group is successful. However, prior to being placed in that bid pool, the decision in block 1332 is made. In block 1332, it is determined if there is an eligible preferred vendor. The term eligible preferred vendor in this embodiment is used to refer to a vendor with bid(s) that have not yet been processed, which bid(s) are within the price differential entered by the buyer. If not, control passes to block 1335 where the buyer is added to the working winning group (compare block 735). Otherwise, a skip indication is stored to indicate that the buyer is optimistically passing up (or is being plucked from) the current bid pool in hopes of being part of a bid pool of his preferred vendor (block 1333). From block 1333, control passes to block 1340.

Like block 750, in block 1350 it is determined if the working winning group is successful. In Figure 13B, if the working winning pool is not successful, control passes to block 1366. In block 1366, it is determined if price differential(s) were entered for the vendor submitting the bid of the failing working winning pool. If not, control passes to block 1360. Otherwise, control passes to block 1367. Effectively, this is identifying those situations where a buyer has a preferred vendor whose bid was acceptable to the buyer, but there was not sufficient quantity in the pool to meet the quantity requirement of the preferred vendor's bid.

In block 1367, the fact that the preferred vendor's bid was not successful is recorded and control passes to block 1368. This indication is used in determining if there is an eligible preferred vendor (see block 1332).

At block 1368, it is determined if there were any prior bid pools (working winning groups) passed up by buyer(s) of the failing working winning pool based on the optimistic hope that the buyer(s) would be satisfied by a preferred vendor. This determination can be made based on any skip indication(s) stored in block 1333. If so, control passes to block 1369. Otherwise, control passes to block 1360.

In block 1369, the system tries to place any buyer(s) determined in block 1368 to have skipped a prior working winning group into the working winning group that was skipped. The quantity of a prior working winning group (assuming it was successful) is often going to be sufficiently below the max quantity of the vendor such that buyers can be added. This is an optimization that need not be implemented in all embodiments. In certain embodiments, during the process of adding a buyer to a prior working winning pool, it is determined whether the additional quantity is sufficient to satisfy the minimum quantify requirement of a larger pricing tier. If so, corrective action is taken (e.g., the lower bid price of the larger pricing tier is selected for the working winning pool; the price differential is premarked a fail and the current bid state is recalculated; etc.). From block 1369, control passes to block 1360.

If it is determined that there are still unsatisfied buyer(s) left (block 1360), control passes from block 1360 to block 1362. In block 1362, it is determined if there are any bids left. If so, control passes to block 1365. Otherwise, control passes to block 1363.

When control passes to block 1363, it has been determined that there are buyers for which none of the bids were acceptable. In block 1362, it is determined if any of the unsatisfied buyers skipped (were plucked from) a bid pool in the hope of being placed in a bid pool of a preferred vendor. If not, control passes to block 360 and the buyers remain unsatisfied in the current bidding state. If so, the fact that a buyer skipped a bid pool could be stopping

that buyer, as well as others, from being satisfied and control passes to block 1364.

In block 1364, the current bid state is redone with at least one of the price differentials premarked fail. Premarking a price differential as fail will result in a successful working winning group not being passed up by a buyer in hopes of a being part of a failing working winning pool of a preferred vendor. In certain embodiments, this is still done even though the optimization of blocks 1368 and 1369 is performed for a number of possible reasons (e.g., because that optimization is not always successful; because the test for qualification of a larger pricing tier was successful in an embodiment where this causes the current bidding state to be redone; etc.)

VENDOR POOLING IN LOT

Yet another invention is a method and apparatus for buyer and/or vendor pooling based on lots. Buyer(s) may choose to buy multiple products and vendor(s) may choose to sell multiple products, such that a transaction involving a number of products, one or more buyers and one or more vendors occurs. In one embodiment, each buyer must be supplied from a single source (e.g., a manufacturer, a distributor, etc.), but each buyer is free to designate which manufacturers are acceptable on a per product basis and/or to designate which vendors are acceptable. In another embodiment, a given buyer may have the same ability to designate, but may be supplied from multiple sources. In either instance, pooling the buyer's purchases with purchases of other buyers may create what is referred to as horizontal price pressure, where the quantity of a particular product purchased increases and thereby drives down the price per unit for that particular product. Likewise, when purchasing all products from the same vendor, vertical price pressure may be created in which case the amount of business the vendor gets from the buyer causes the vendor to discount all or portions of that business.

To describe embodiments of a system for trading by lots, the type of data and data structures used by certain exemplary embodiments are first described, followed by a description of how that data is collected and operated on.

Turning to Figure 14, one representation of an exemplary data structure for buyer and vendor pooling based on lots according to one embodiment of the invention is illustrated. This data structure stores a set of Buyers 1410.

Associated with each of the buyers is a group of items (referred to as a lot) they are interested in purchasing. A lot is made up of different lot items. A lot item is a type of product (where one or more products may make up the class defined by a given lot item) or a specific product. Thus, each of the Buyers 1410 has associated with it a group of Lot Items 1420 that make up that Buyer's lot. (It should be understood that different buyers might express interests in different lot items).

The buyer's interest is referred to as a Buyer Purchase Interest. A Buyer Purchase Interest can be an item or a Lot of more than one item (Lot item). Each item or Lot item is associated with a quantity interested by the buyer. As mentioned earlier, an item or Lot item can be a product type or a specific product.

The storage of a lot item for a given buyer can indicate that that buyer is interested in purchasing that lot item. Each Lot Item 1420 has associated with it one or more vendor product interest, each of which records information regarding that buyer's interest in purchasing a specific product that falls within the class defined by that lot item.

A vendor (e.g., a manufacturer, a distributor, etc) such as Vendor 1460 is offering a set of vendor products (Vendor Products 1470). The vendor enters bids for its products that qualify for a trade by bid brackets (Bid Brackets 1440). Each bid bracket is a separate grouping of bid values collected according to certain criteria as described below (e.g., amount of sale, quantity of goods, combination of specific products, etc.). Thus, a bid bracket stores bids (e.g., Lot Item Bids 1450) entered by the vendor for the different vendor products involved

in the trade. It should be noted that a vendor need not bid on every product in the pool formed by the one or more buyers participating or bid on every item in the lot of each buyer. Rather, a vendor bids on what that vendor wishes to supply. However, in a system where each buyer must be supplied from a single source, if a vendor does not bid on all the items of a buyer's lot, that vendor will not be selected by the system as qualified to supply that buyer's lot. It should also be noted that in one embodiment of the system, although each buyer must be supplied by a single source, not every buyer must be supplied by the same single source.

As will be further described later herein, to manage the products offered by the different Vendors, a product hierarchy can be used as described below. In such a hierarchy, different product categories are defined to group specific products according to some relationship. In one embodiment of such a hierarchy, each Vendor Product 1470 may correspond to multiple Product Categories 1480, and each Product Category 1480 may include multiple Vendor Products 1470 (including products from different vendors).

While Figure 14 shows one exemplary data structure, it is understood that many different structures can be used to implement the invention. Furthermore, the structures described (e.g., the exemplary one in Figure 14) can be implemented using any type of programming environment (e.g., relational database, object-oriented database, Btree, flat file etc.).

While simple definitions have been supplied above for items in Figure 14, further definitions are provided as follows. A buyer is a potential purchaser of one or more products in a trade or transaction.

A vendor is a potential seller in such a trade or transaction. A vendor may be a manufacturer or a distributor for example, and may sell products from multiple manufacturers or sources. However, all purchases by a buyer from a vendor in a transaction would preferably result in a single invoice. A distributor can provide a cost plus, a resell, and/or a value-added service.

A category is a set of products, typically with some sort of unifying feature or aspect, such as all AA size alkaline batteries or all batteries offered by a particular vendor.

A vendor product is a specific product manufactured by a specific source, supplied by a specific vendor, etc.

A vendor product interest stores the maximum price a buyer will pay for a specific product. Note that vendors may offer multiple products, and a vendor product interest will typically refer only to one such product. Note also that a vendor product interest may not be vendor specific so much as it may be product specific, referring to a particular product which may be supplied by more than one vendor.

A lot item is associated with a set of vendor product interests with a quantity of the lot item desired. The lot item may also aggregate a set of vendor product interests in the same way a category does, so a lot item may be AA size alkaline batteries or AA size batteries for example. However, a lot item may be more flexibly defined, and typically will be defined in terms understood within a particular industry by both buyers and sellers. In one embodiment, a single vendor must supply the quantity of the lot item sought by the buyer – i.e., lot items are not broken up.

A lot is a union of lot items within a trade, and typically a lot will only include lot items having a common feature or theme such as a common application. However, depending on the implementation, lots are not so limited, and may include anything a buyer wishes to include, and may also be defined by what a vendor will include. A natural lot would be batteries, having lot items including AA size batteries, AAA size batteries, C size batteries, D size batteries, and 9V batteries. Another natural lot would be a flashlight and the batteries suitable for powering the flashlight, as the lot items (the flashlight and the batteries) are suitable for a common application, even though they may be manufactured by separate entities.

A bid bracket is associated with a set of lot item bids entered as a collection by a single vendor. A lot item bid is a per unit price for that product. A bid bracket includes a current gross sales value. For a given current bidding state as described below, the current gross sales is calculated by: 1) for each buyer assigned the bid bracket, for each vendor product interest of that assignment, multiply the buyer's maximum price by the buyer's quantity; and 2) sum the results. A bid bracket also includes a maximum and minimum gross sales values. These are values that define a target sales range. When the current gross sales is within the target sales range, the bid bracket is determined to be satisfied (e.g., there is sufficient business assigned to the bid bracket to meet the minimum requirements). Finally, the bid bracket includes a current sales value which is the actual amount of sales made by the vendor based on the buyer(s) currently assigned to the bid bracket. For a given current bidding state as described below, the current sales is calculated by: 1) for each buyer assigned the bid bracket, for each vendor product interest of that assignment, multiply the vendor's bid price by the buyer's quantity; and 2) sum the results.

Figure 15 further illustrates a simple example of the data structure of Figure 14 according to one embodiment of the invention. The example of Figure 15 shows one buyer – Buyer 1510. Buyer 1510 has indicated an interest in Lot Item A and Lot Item B. Furthermore, Buyer 1510 has indicated that Vendor Product 1 and Vendor Product 2 would be suitable for Lot Item B, while Vendor Product 5 would not be suitable. Likewise, Buyer 1510 has indicated that Vendor Product 3 and Vendor Product 4 would be suitable for Lot Item A.

Figure 15 also shows three Vendors – Vendors 1 – 3. Vendor 1 is offering Vendor Product 1. Vendor 2 is offering Vendor Product 2, Vendor Product 3, and Vendor Product 4. Vendor 3 is offering Vendor Product 5. Since Vendor 3 is not selling a product acceptable to Buyer 1510, Vendor 3 will not participate.

As illustrated in the example of Figure 15, Vendor 2 is offering at least one product that falls into the classes defined by Lot Item A and Lot Item B. In contrast, Vendor 1 is offering a product that falls into the class defined by Lot Item B, but not one that falls into the class defined by Lot Item A. As such, in a system where a given buyer's lot must be satisfied from a single source, only Vendor 2 could satisfy Buyer 1510. However, in an implementation where a given buyer's lot can be satisfied from multiple sources, Vendor 1 may be involved.

It should be noted that Figure 15 illustrates a situation where none of the vendors is selling the same specific product (e.g., a product with the same SKU); This situation is common, but not limited to, when purchasing from manufacturers as opposed to distributors. However, the system is not limited to this situation. For example, different vendors (e.g., two distributors; a manufacturer and a distributor; etc.) may sell the same specific product. Embodiments of the invention can be implemented to handle this situation in any number of different ways. For example, one vendor product interest entry may be generated for a given buyer that identifies the specific product irrespective of vendor, while each vendor that offers that specific product can have a separate vendor product entry for that specific product. As another example, for the given buyer, multiple vendor product interest entries for the same specific product may be generated, one for each vendor.

Figure 15 also shows that Vendor 2 has entered two different bid brackets (Bid Bracket A and Bid Bracket B), while Vendor 1 has entered just Bid Bracket C. Bid Bracket A for Vendor 2 includes Vendor 2's bids for Vendor Product 4 and for Vendor Product 2, while Bid Bracket B includes Vendor 2's bids for Vendor Product 3 and Vendor Product 2. Thus, the example of Figure 15 shows that the criteria used in defining the different bid brackets includes different combinations of products. However, as described above, the criteria can be any number of things. For example, the criteria may additionally or separately be

different prices based on the dollar value of the whole sale; as such, two different bid brackets may be made up of the same combination of products, but have different bid values for one or more of the products in the combination.

While Figure 15 shows a single buyer, it is understood that at least certain embodiments of the invention support the pooling of buyers. In these implementations, there would be multiple buyer structures and the same bid brackets would be applied to those structures. For example, assume that there is a second buyer who is interested in Lot Item B, but not Lot Item A. In addition, that buyer will accept either vendor products 1 or 2. As such, Vendors 1 or 2 using Bid Brackets A, B, or C could satisfy this buyer.

It should be understood from the above that any combination of lot items can form a lot. To provide some examples, Lot Item A and Lot Item B could be respectively AA and AAA batteries. As such, the vendor product interest for Lot Item A would be specific AA batteries. As a second example, Lot Item A and Lot Item B could be respectively tongue depressors and AAA batteries. In this second example, Lot Item A is somewhat unrelated to Lot Item B. It should be noted that there is a give and take depending on the relationship of the lot items in a lot – the more unrelated the lot items in a lot are allowed to be, the greater the number of lot items that can be part of the lot, and thus, the greater the leverage due to the larger potential sale vs. the more related the lot items in a lot are required to be, the less the number of lot items that can be part of the lot, but the more vendors who will likely be competing because more vendors will qualify as single source suppliers for a buyer's lot.

Another example of a possible combination of lot items provided below and related to the concept of disposables above is also illustrative; assume that a buyer is interested in a particular quantity of flashlights and batteries for those flashlights. The buyer may get involved in a single product type pool for the flashlights and enter the batteries as a disposable (see above). In this case, the batteries are a condition on the bid, but the buyer is not agreeing to purchase

the batteries. Instead, the vendor is agreeing that if and when (with whatever restrictions the parties agree to) the buyer comes to the vendor for batteries, the price is established (again, according to whatever agreement the parties agreed to). In contrast to treating the batteries as a disposable to a single product type trade of the flashlights, the buyer could join a lot trade where the lot includes the flashlights (e.g., Lot Item A) and the batteries for the flashlights (e.g., Lot Item B). In this situation, the buyer is agreeing to purchase the specified number of batteries.

Figure 16 illustrates an example of correspondences between product categories and vendor products. Category A includes Vendor Product 1 and Vendor Product 2. Category B includes Vendor Product 3 and Vendor Product 4. Category C includes Vendor Product 2 and Vendor Product 3. Category D includes Category A and B. Category E includes Vendor Product 4. Of course, any number of other levels and/or relationships could be defined. To provide an example of categories in the product hierarchy, the AA and AAA example from before is used. Applying this example, Category D could be Batteries, Category A could be AA batteries, and Category B could be AAA batteries. In certain embodiments, the product hierarchy is not used; in other embodiments, the product hierarchy acts as a product catalog. See also Figure 17.

Having described exemplary data and data structures used by exemplary embodiments of the invention, a description of how certain exemplary embodiments collect and operate on that data is now provided. The information that would be stored in the above-described data structure for a lot trade can be collected using any number of techniques. For example, the information could be collected using a mechanism similar to that described earlier with reference to Figure 3 for buyer/vendor pooling for a single product type. Thus, the data structure would be populated during acts like those described with reference to blocks 310-340, with the addition that buyer lots would be entered and bid on. As such, the manner in which Figures 4A-B, 5A, and 6A could be modified for a

lot trade will be described to illustrate one such example of how the data could be collected.

For a single product type trade, block 310 is expanded on in Figure 4A. With reference to Figure 4A, certain changes would be made to support a lot trade. For example, in block 410 the information on a lot item would be entered. In addition, with respect to block 435, products of the lot item type would be selected rather than products of the product type. Also, a decision block would be added between block 440 and 445. In this decision block, control would pass back up to block 410 in those situations where additional lot items were to be added to the current buyer lot. As described with reference to Figure 3, the intermediary server 12 could perform block 310.

Different embodiments can support any number of different techniques for defining and controlling the lots. For example, a lot could be limited to the lot items selected during the request for trade (block 310). Alternatively, different buyers joining the trade could be allowed to add whatever lot items they choose or according to criteria. For example, such criteria could be that only items can be added that are supplied by the same vendors that supply the existing lot items in the lot. As another example, such criteria could be that only items can be added that are at or below a certain level or node of the product hierarchy.

With reference to Figure 4B, the blocks would be changed in a manner similar to Figure 4A. However, Figure 4B would be modified to allow the new buyer to cycle through the existing lot items in the lot, and if supported, add new lot items.

At this point, referring to Figure 3, block 320 is completed and block 330 is reached. In block 330, the combined request for quote is generated. For a single product type trade, block 330 is expanded on in Figure 5A. In Figure 5A, basically the different buyer requests are combined into a single "virtual buyer." Based on the criteria of the buyer(s) and seller(s), each vendor's pool quantity is determined (that portion of the combined request for proposal that a given seller

is qualified to bid on). In addition, subpool profiles are generated for each seller based on characteristics.

Comparing a single product type trade to a lot trade, the different buyer lots are combined into a single "virtual buyer." Based on criteria of the buyer(s) and seller(s), each vendor's lot is determined (the portion of the combined request for proposal that the seller is qualified to bid on; thus, this can be composed of one or more of the buyer's lots). For example, assuming a system where each buyer must be supplied by a single source, a check is made for each vendor for "vendor compatibility" (that a given vendor can supply all the lot items selected by the buyer and that there is product compatibility - Product compatibility is the determination that the vendor's products are acceptable to the buyer based on the vendor product interest information previously entered by the buyer.) For vendors that are determined to be compatible to a given buyer, certain embodiments generate subpool profiles in a similar manner described above; with certain embodiments handling the characteristics in different ways. For example, the timing characteristic could be on a per lot item basis, or on an entire buyer lot basis.

It should be noted that the above check (as well as the auto exclusion checks) is considered to be a static check in the sense that it occurs before the real time bidding. This is in contrast to a dynamic check for vendor compatibility that is performed during the real time bidding. Such a dynamic check is performed in embodiments that allow a given vendor to discontinue a bid on a given vendor product. The static and dynamic compatibility checks may be based on use of a number of different structures (e.g., a compatibility list such as that illustrated in **Figure 19A**, where each vendor is listed in an entry with an incompatible buyer (or compatible buyer for positive instead of negative compatibility); a compatibility matrix such as that of **Figure 19B** where an x in the matrix may represent compatibility or lack thereof; etc.). Note that such an x may be represented in memory by something as simple as a zero or one.

At this point, referring to **Figure 3**, block 330 is completed and block 340 is reached. In block 340, the vendor pooling phase is performed. For a single product type trade, block 340 is expanded on in **Figure 6A**. Again **Figure 6A** would be modified to support a lot trade. Particularly, each vendor could cycle through the lot items in their vendor lot and create different bid brackets as pricing tiers. For example, the vendor could enter the bid for each vendor product for a given bid bracket to populate the Lot Item Bids 1450, as well as enter the min and max gross sales for the bid bracket (see Bid Bracket 1440). As another example, a vendor could have entered a base price for different vendor products. This vendor could indicate that it wanted multiple tiers, designating successive min/max gross sales values for the tiers (i.e., a first tier is from \$0-\$X, a second tier is from \$X-\$Y, etc.). The vendor could also adjust the base prices for the different tiers. For example, assuming an embodiment in which the base prices are the default lot item bids, a vendor could be allowed to adjust a given bid bracket by adjusting the total bid on the whole vendor pool (e.g., by entering a percentage discount off the base prices – this is effected by discounting each lot item bid by the percentage); adjust the bid on a line item basis (e.g., by entering a percentage discount for each lot item); adjust the bid for a group of line items (e.g., by entering a percentage discount off the base prices) and individually for others (e.g., by entering a percentage discount for each lot item, entering a new line item bid value, etc.); etc.

Once block 340 is completed, control passes to block 350 where the real time bidding process begins. Any number of different techniques can be used to process the real time bidding for a lot trade. These techniques will attempt to match vendors to buyers according to the criteria entered by the buyers and vendors, as well as according to the criteria chosen for the technique. For example, the criteria chosen for the technique could be to maximize the savings of the buyers (e.g., the overall lowest, the most buyers' lowest, etc.). In addition, even assuming these criteria, any number of different ways of processing based

on these criteria are possible. While there are a number of different techniques within the scope of the invention, several exemplary techniques are described below for purposes of illustration.

For example, Figures 18A-C illustrate flow diagrams that are performed as block 350 of Figure 3 when performing a lot trade according to one embodiment of the invention. At block 1802, the current bidding state is initialized and control passes to block 1803. At block 1803 of Figure 18A, the next buyer is selected. The buyers are ordered according to some order criteria (e.g., the order in which they joined the transaction, etc.) and the next one is selected according to that order each time block 1803 is performed.

The preferred brackets for the buyer are found at block 1806. First, a determination of which bid brackets are available is made by eliminating those bid brackets corresponding to vendors not compatible with the buyer (vendor compatibility), and then by eliminating those bid brackets based on "bid bracket compatibility" (a bid bracket is bid bracket compatible when one or more of its lot item bids match a buyer's designated vendor product interest; and in implementations that require each buyer be supplied by a single source, the bid bracket must include a lot item bid that matches a buyer's designated vendor product interest for each lot item). The surviving bid brackets are ordered according to some criteria.

For example, these criteria could include the lowest price for the Lot Item the buyer has selected, the lowest price for the overall lot, an order of preference, a volume basis (e.g., order based on highest volume vendor from past trades), etc. An order of preference would exist in embodiments where a buyer can put some type of order of preference to the vendor product interests 1430, the Vendors 1460, etc. For example, where the vendor product interests are rated, application of a given bid bracket would include generating a rating for the bid bracket from the individual vendor product interest ratings (e.g., a weighted average based on price, a weighted average based on quantity, etc.). A form of

order of preference could be preferred result criteria. Of course any number of different tie breaking mechanisms could be used.

At block 1809, a determination is made as to whether any untried preferred brackets are available. If no untried preferred brackets are available, the buyer is unsatisfied per block 1824, and processing moves to block 1821. If one or more untried preferred brackets are available, the first available untried bracket is selected at block 1812. The buyer is assigned to the bid bracket at block 1818. In block 1821, if there are any unprocessed buyers, control passes back to block 1803. Otherwise, control passes to block 1836.

In other words, where there is one or more bid brackets that have bid bracket compatibility with a buyer, the buyer is optimistically assigned to the most preferred of those bid brackets. In addition, a bracket is said to be bid bracket compatible with a buyer if it can result in a transaction where the buyer gets all the lot items at a price below the maximum price specified by the buyer. This may further be influenced by considerations such as maximum prices for particular products or for products from a particular vendor, and for forms of preferential pricing such as allowing for a higher price from certain vendors.

It will be appreciated that the preferential pricing method and apparatus described earlier may be applied to selection of bid brackets here as well. In one embodiment, a buyer may enter one or more preferred results as part of the buyer's preferred criteria. For example, a buyer specifies a price premium of five percent for a preferred result associated with the buyer's lot. This price premium indicates that the buyer is willing to pay more for the lot if there is a surviving bid bracket available from a preferred vendor, as long as the price of the surviving bid bracket from the preferred vendor is within the premium. In one embodiment, the premium is applied as a discount to the price of the surviving bid bracket from the preferred vendor. As shown in block 1806 of **Figure 18A**, the surviving bid brackets are sorted according to the price of each bid bracket.

Note that the bracket need not satisfy the buyer based solely on the buyer's sales, and buyers are typically assigned to bid brackets in an optimistic manner, assuming sufficient sales will occur to cause the bid bracket to be satisfied.

Once all the buyers have been processed and optimistically assigned to a bid bracket where possible, the system attempts to ensure that each buyer is assigned a bid bracket whose current gross sale value is within the target sales range defined by the min and max gross sales for that bid bracket (referred to as a satisfied bid bracket). In those cases where a buyer is not assigned a satisfied bid bracket, the system attempts to reassign buyers currently assigned to other unsatisfied bid brackets. This reassignment can be to either a different satisfied bid bracket or to a different unsatisfied bid bracket to which other buyers are assigned. To perform this reassignment, the assigned buyers are ordered according to an order criteria (e.g., giving the buyers who signed up for the transaction earliest a priority higher than those who signed up for the transaction later). The process of reassigning buyers is illustrated in Figure 18B.

Initially, an assigned buyer is selected as Buyer 1 according to the order criteria at block 1836. In block 1839, it is determined if the bid bracket to which Buyer 1 is assigned is a satisfied bid bracket. In one embodiment, this is performed by calculating the current gross sales value for the bid bracket based on the buyers currently assigned to that bid bracket, and then determining if the current gross sales value is within the min max gross sales range. If so, control passes to block 1863. Otherwise, control passes to block 1842.

In block 1842, the last unchecked assigned buyer according to the order criteria is selected as Buyer 2. At block 1845, it is determined if Buyer 2 is not in Buyer 1's bid bracket, if Buyer 2's bid bracket is not satisfied, and if Buyer 2 is bid bracket compatible with Buyer 1's bid bracket. If so, then Buyer 2 is reassigned to Buyer 1's bid bracket at block 1848. Either way, Buyer 2 has now been checked as per block 1851. Next, a determination at block 1854 is made as

to whether any unchecked buyers remain. If so, the process flows to block 1842. If not, the process flows to block 1857.

At block 1857, a determination is made as to whether, after the reassignments of block 1848 (if any were made), Buyer 1's bid bracket is satisfied. If not, all of the buyers who were reassigned in block 1848 are reassigned back to their original bid brackets (1860). Either way, the process then moves to block 1863. At block 1863, it is determined whether any assigned buyers remain that have not been processed. If so, the process moves to block 1836 and all are marked unchecked; otherwise the process proceeds to block 1869.

After reassigning buyers, some buyers may still be in bid brackets that are unsatisfied, but could be satisfied if sufficient sales were found. Such bracket assignments need to be cleaned up. Initially, an assigned buyer is selected according to the selection criteria. At block 1872, a determination of whether the selected buyer's bid bracket is satisfied. If not, control passes to block 1878; otherwise to block 1890.

In block 1878, it is determined if any untried preferred brackets remain (these are the same brackets from 1806). If not, the buyer will remain unassigned (block 1893) and control passes to block 1896. If so, control passes to block 1881 where the next remaining preferred bracket is selected. From block 1881, control passes to block 1884.

In block 1884, it is determined if the selected bracket is satisfied. In one embodiment, this determination is done without including the currently selected buyer. However, in an alternative embodiment, the currently selected buyer is included. If the selected bracket is determined at block 1884 to not be satisfied, and the process goes back to block 1878 to determine whether any other preferred brackets remain. If the selected bracket is satisfied, then block 1887 results in assignment of the buyer to the selected bid bracket. As a result, the buyer is satisfied per block 1890.

If it is determined at block 1896 that there are other assigned buyers that have not been processed, the process goes to block 1869. If all assigned buyers have been processed, the process stops at termination block 1899. It should be noted that at this point, a final value for the current sales of the different bid brackets can be calculated for the current bidding state.

Figures 20A-C are flow diagrams illustrating another embodiment of the function performed as block 350 of Figure 3 when performing a lot trade.

As discussed in the previous process flow of Figures 18A-C, at any given time, each buyer has a status of "unassigned", "assigned", "satisfied", or "unsatisfied." At the completion of each bidding state, each buyer has a status of either "satisfied" or "unsatisfied". However, during the bidding state, each buyer may also have a status of "assigned" or "unassigned", where "assigned" means the buyer is temporarily assigned to one of the preferred bid brackets associated with that buyer.

Initially, the buyers are given the status of "unassigned" -- they are not assigned to any bid brackets from the vendors. (It should be understood the buyer's status of "unassigned" may be changed during the bidding state to "assigned", "satisfied" or "unsatisfied"). In one embodiment, based on each buyer's lot, the qualifying bid brackets are associated with that buyer. For example, all vendors that supply all of the lot items for a buyer and have not been specifically excluded by then are qualified, and their respective bid brackets are associated to that buyer.

The buyers are ordered according to some order criteria. For example, in one embodiment, the buyers are ordered in the order in which they joined the transaction. Furthermore, the bid brackets are associated with each buyer are ordered according to some order criteria. In one embodiment, the bid brackets are ordered in the order of bid bracket price, with the bid bracket having the lowest price being the first bid bracket. It should be noted that ordering the bid brackets based on price is dependent on the cost savings of applying the bid

brackets to the buyer's demand. For example, Buyer 1's purchase interest is a Lot including 1 AA battery and 10 AAA batteries. Buyer 2's purchase interest is a Lot including 10 AA batteries and 1 AAA battery. The bid from Vendor 1 is 5 cents for AA batteries and 1 cent for AAA batteries. The bid from Vendor 2 is 1 cent for AA batteries and 5 cents for AAA batteries. Thus, for Buyer 1, the lowest bid is from Vendor 1, and the ordering of bid brackets would be Vendor 1 and Vendor 2. On the other hand, for Buyer 2, the lowest bid is from Vendor 2, and the ordering of bid brackets would be Vendor 2 and Vendor 1.

Referring to **Figure 20A**, at block 2002, the current bidding state is initialized. The buyers are given the initial status of "unassigned". (The "unassigned" buyers are those that are not yet "assigned", "satisfied" or "unsatisfied"). As previously discussed, the buyers in the transaction are sorted, in one embodiment, in the order that the buyer enters the transaction. Furthermore, the preferred bid brackets for each buyer are determined, similar to block 1806 of **Figure 18A**. Note that the bid brackets are viewed from each buyer's perspective. In the embodiment where the preferred bid brackets are sorted by lowest price first, a lowest price bid bracket for Buyer 1 may not be the same as a lowest price bid bracket for Buyer 2. Initially, all the preferred bid brackets are marked "untried".

At block 2003, a next unassigned buyer is selected according to the sorted order for the buyers. At block 2009, a determination is made as to whether any untried preferred bid brackets are available. If there is not any untried preferred bid brackets available, the buyer is given the status "unsatisfied" per block 2024 which leads to block 2021. An "unsatisfied" buyer is a buyer whose lot can not yet be satisfied by any of the bid brackets in the current bidding state. For example, in one embodiment, a buyer does not have a compatible bid bracket when none of the bidding vendors alone can satisfy all of the lot items requested by the buyer. In another example, a buyer does not have a compatible bid bracket when the buyer only wants to deal with either vendor 1 or vendor 2

alone, but neither vendor 1 nor vendor 2 can alone supply all the lot items requested by the buyer, even though there is a vendor 3 that can. Still in another example, a buyer does not have a compatible bid bracket when the maximum price the buyer willing to pay for the lot can not be satisfied by any vendors. In one embodiment, the unsatisfied buyer is not considered again until the next bidding state.

Referring to block 2009, if one or more untried preferred brackets are available, the next available untried preferred bid bracket is selected at block 2012. The preferred bid brackets are sorted according to order of lowest bid bracket price first, as previously discussed. The selected bid bracket is marked as tried. At block 2015, a determination is made to see if the bid bracket can satisfy the buyer's demand. For example, the quantity demanded by the buyer may be more than the quantity that can be provided by the vendor associated with that particular bid bracket. When the buyer's demand can not be satisfied, the bid bracket fails and the process loops back to block 2009 to try the next untried preferred bid bracket for this buyer. In one embodiment, when a bid bracket fails to satisfy this buyer's demand, that bid bracket may not be considered again for this buyer.

Referring to block 2015, when the buyer's demand can be satisfied by the bid bracket, the buyer is assigned to that bid bracket, as shown in block 2018. The buyer's status is accordingly changed from "unassigned" to "assigned". In block 2021, a determination is made to see if there are any "unassigned" buyers that have at least one untried bid bracket. A buyer having "unassigned" status if the buyer has not been assigned to a preferred bid bracket or if the buyer has been determined to be "unsatisfied" because there are no preferred bid brackets. If there are more "unassigned" buyers who have at least one untried bid bracket, control passes back to block 2003 and the next "unassigned" buyer in the order is selected. Otherwise, the process flows to block 2027, which leads to block 2033

of **Figure 20B**. At the completion of the process flow of **Figure 20A**, the status of each buyer in the current loop iteration is either "assigned" or "unsatisfied".

Having optimistically assigned the buyers, the system checks if the assignment satisfy the buyers and the vendors, and attempts to reassign buyers as necessary, as shown in **Figure 20B**. In one embodiment, when the buyer is in a bid bracket that can satisfy the buyer's demand quantity, the buyer remains in that bid bracket during the current bidding state. Furthermore, if the buyers assigned to the bid bracket have enough supporting quantity to satisfy the bid bracket (e.g., the sales is in range), the buyers are considered satisfied. Accordingly, the status of the buyers is changed from "assigned" to "satisfied". In one embodiment, the buyer or buyers assigned to a bid bracket that is already satisfied are not pulled out of that satisfied bid bracket for the rest of the bidding process.

When the buyers assigned to the bid bracket do not have enough supporting quantity to satisfy the bid bracket (e.g., sales is not in range), the system will try to find other buyers to help increasing the supporting quantity to bring the sales in range. In one embodiment, the system finds other buyers currently assigned to bid brackets that do not have sufficient supporting demand and attempt to reassign them. In this embodiment, the reassignment is done by considering each buyer in the reverse order (e.g. latest) of the buyer joining the transaction, as shown in **Figure 20B**. In another embodiment, the reassignment can be done from the earliest buyer joining the transaction. Other embodiments of reassignment of buyers may also be implemented.

By way of example, the process flow of **Figure 20B** evaluates for each "assigned" buyer the bid bracket the buyer is assigned to. Initially, at block 2036, an "assigned" buyer is selected as Buyer 1 according to the order criteria. Furthermore, all "assigned" and "unsatisfied" buyers are marked as unchecked. At block 2039, a determination is made to see if the bid bracket assigned to Buyer 1 is a satisfied bid bracket (e.g. sales of bid bracket is in range). If Buyer

1's bid bracket is a satisfied bid bracket, the process flows to block 2063 where the next "assigned" Buyer 1 is selected. If Buyer 1's bid bracket is not satisfied, the process flows to block 2040.

At block 2040, a determination is made to see if there are any unchecked (assigned and unsatisfied) buyers remaining. If so, the process continues with the next unchecked buyers at block 2042. However, if there are no more unchecked buyers, the process flows from block 2040 to block 2060. The reassignment at this point is unable to produce a satisfied bid bracket, and all the buyers reassigned in block 2048 in this iteration are moved back to the bid brackets from which it was reassigned, as shown at block 2060.

Referring to block 2042, starting from the last buyer in the order criteria (i.e., in reverse order), the next unchecked buyer (e.g. Buyer 2) is selected for examination. These buyers are considered "unchecked" because they have not been examined for reassignment into the bid bracket currently being considered (i.e., Buyer 1's bid bracket). This same Buyer 2 could be considered for reassignment later to a different bid bracket if this reassignment fails. As discussed previously, since the buyers are currently "assigned", they are not "satisfied", "unsatisfied", or "unassigned". At block 2045, if Buyer 2 is already in the same bid bracket as Buyer 1, Buyer 2 is not removed from the bid bracket currently assigned to Buyer 2. If Buyer 2 is currently in a satisfied bid bracket, then Buyer 2 is not removed from that satisfied bid bracket, as shown at block 1846. If Buyer 1's bid bracket can not accommodate Buyer 2's demand, Buyer 2 is also not removed from Buyer 2's currently assigned bid bracket, as shown at block 1847 (In other words, if Buyer 1's bid bracket is one of the next untried preferred bid brackets for Buyer 2 in the bid bracket order (see block 2006 of **Figure 20A**), but Buyer 1's bid bracket can not support Buyer 2's demand, in addition to the demand of the other buyers already assigned to Buyer 1's bid bracket, then Buyer 2 is not moved from its currently assigned bid bracket).

If, after the execution of blocks 2045, 2046, and 2047, Buyer 2 is to be removed from Buyer 2's currently assigned bid bracket, then Buyer 2 is reassigned to Buyer 1's bid bracket, as shown at block 2048. Whether Buyer 2 remains in the same bid bracket or gets reassigned to Buyer 1's bid bracket, the Buyer 2 is considered checked, as shown at block 2051. From block 2051, the process flows to block 2039 where a determination is made to see if the Buyer 1's bid bracket is satisfied (sales in range). As discussed previously, if Buyer 1's bid bracket is satisfied, the process flows to block 2063 to select another "assigned" Buyer 1, if any. If Buyer 1's bid bracket is not satisfied, then the process flows to block 2040.

At block 2063, it is determined whether there are any assigned buyers remaining that have not been processed. If so, the process moves to block 2036 where the next assigned buyer according to the order criteria is selected and where all remaining assigned buyers are marked as unchecked. The process of **Figure 20B** continues until all the assigned buyers in the order criteria are processed. When there are no more assigned buyer in the order, as determined at block 2063, the process flows to block 2066, which leads to block 2069 of **Figure 20C**.

After the process of reassigning the buyers, some buyers may still be in bid brackets that are not satisfied, but these buyers could be satisfied by other of their preferred bid brackets, if any. These buyers are unassigned from their currently assigned bid brackets. In one embodiment, the bid bracket that the buyer is unassigned from is no longer considered as a preferred bid bracket for the buyer during the current bidding state.

When the process flows to block 2069 of **Figure 20C**, if there are no buyers with the "assigned" status, the process flows to block 360 of **Figure 3** with the buyers having the status of either "satisfied" or "unsatisfied". However, if there are "assigned" buyers as determined at block 2069, then the next "assigned" buyer is selected according to the order criteria. At block 2072, a

determination is made to see if the sales of the bid racket that the selected buyer is currently assigned to is in range. If the sales for the bid bracket is in range, then the status of the buyer is changed from "assigned" to "satisfied", as shown in block 2090. In one embodiment, the "satisfied" buyer is removed from the bidding process. At block 2093, the status of the selected buyer is changed from "assigned" to "unassigned". This allows the buyer to be assigned to the buyer's next preferred bid bracket, if any. In one embodiment, the bid bracket is removed from the selected buyer's preferred bid brackets.

At block 2096, it is determined if there are more "assigned" buyers. If there are more "assigned" buyers, the process flows to block 2069. Otherwise, the process flows to block 2097 where a determination is made to see if there are more "unassigned" buyers. If there are "unassigned" buyers, the process proceeds to block 2098 which leads back to block 2003 of **Figure 20A** where each "unassigned" buyer is assigned to the "unassigned" buyer's next available preferred bid bracket, if any. Otherwise, the current bidding state is done. The process flow exits **Figure 20C** and proceeds to block 360 of **Figure 3**. At this point, a final value for the current sales of the different bid brackets can be calculated for the current bidding state.

While the above is described with several exemplary techniques for determining the current bidding state, another example takes a simpler approach. With respect to **Figure 15**, this approach includes comparing the prices in Vendor Product Interest 4 to Product Bid 4, Vendor Product Interest 3 to Product Bid 3, Vendor Product Interest 2 to Product Bid 2, and if appropriate Vendor Product Interest 1 to Product Bid 1 to determine which bids are the lowest. In one embodiment, the lowest bid for each individual product is the winning bid, and assignments to Bid Brackets are made based on which bracket contains all of the winning bids. In an alternative embodiment, assignments to Bid Brackets are made based on the lowest total for the Lot, rather than the lowest individual bids,

such that a Bid Bracket may result in a higher price for a lot item but a lower price for the lot as a whole, and thereby be assigned as the winning bid.

At this point, referring to **Figure 3**, block 350 is completed and blocks 360 and 370 are reached. In block 370, it is contemplated that new bids can be entered. In a lot trade, embodiments can allow a vendor to enter new bids and/or modify old bids in any number of ways. Of particular interest to a vendor is likely to be the current sales values for their bid brackets. For example, a vendor could be allowed to adjust a given bid bracket by adjusting the total bid on the whole vendor pool (e.g., by entering a percentage discount off the last bids/the current sales – this is affected by discounting each lot item bid by the percentage); adjust the bid on a line item basis (e.g., by entering a percentage discount for each lot item, entering a new line item bid value, etc.); adjust the bid for a group of line items (e.g., by entering a percentage discount off the last bids) and individually for others (e.g., by entering a percentage discount for each lot item, entering a new line item bid value, etc.); etc. Furthermore, when using multiple bid brackets that are distinguished in part based on volume of sales, a vendor can adjust the different bid brackets accordingly to provide different discounts for the different volumes of sales (e.g., if a first and second bid brackets are used in which the min and max gross sales are respectively \$0-\$X and \$X-\$Y, a vendor can provide a higher discount for the larger volume sales required by the second bid bracket as compared to the discount on the lower volume sales of the first bid bracket.).

Of course, the various alternative embodiments described with reference to

Figure 3 can equally apply to the lot trading system. In addition, while the lot trading system is described with several exemplary embodiments, it would be apparent to one skilled in the art that the lot trading system can also be applied to various trading schemes or auction schemes such as, for example, the traditional

auction trading scheme as implemented by Ebay and the reverse auction trading scheme as implemented by Priceline.com.

Thus, there are numerous inventions disclosed some of which can be implemented independent of each other. Whereas many alterations and modifications of the present inventions will no doubt become apparent to a person of ordinary skill in the art after having read the foregoing description, it is to be understood that any particular embodiment shown and described by way of illustration is in no way intended to be considered limiting. Therefore, references to details of various embodiments are not intended to limit the scope of the claims which in themselves recite only those features regarded as essential to the inventions.

CLAIMS

What is claimed is:

1. A computer implemented method comprising:
receiving a purchase request from each of a plurality of buyers;
aggregating the purchase requests to form a combined request for quote;
and
transmitting the combined requests for quote to one or more vendors.
2. The method of claim 1, wherein:
said transmitting includes transmitting the combined requests for quote to
a first and second vendor; and
said method further comprises receiving a bid from each of the first and
second vendors.
3. The method of claim 1, wherein each of said purchase request includes a
price at which that buyer is obligated to purchase.
4. A computer implemented method comprising:
providing a plurality of buyers with a list containing a plurality of
products and/or vendors;
receiving a request for quote from each of said plurality of buyers, when
different ones of said request for quote identify different items on
said list as being acceptable to that buyer;
for each of the identified items, aggregating the request for quotes that
identify that item; and
transmitting each of the aggregated request for quote to one or more
vendors.

5. A computer implemented method comprising:
providing a plurality of buyers with a list containing one or more
products and a plurality of vendors;
receiving a request for quote from each of said plurality of buyers,
wherein different ones of said request for quotes identify different
ones of said plurality of vendors as being acceptable to supply that
buyer; and
for each of the plurality of vendors identified in the request for quotes,
performing the following,
aggregating the one or more request for quotes that identify that
vendor as being acceptable, the aggregated request for
quote forming a vendor pool representing the potential
business for that vendor, and
transmitting the vendor pool to that vendor.
6. The method of claim 5, wherein the vendor pool does not indicate the
identify of the plurality of buyers.
7. The method of claim 5, further comprising:
receiving bids for at least some of the vendors that received vendor pools,
wherein the vendors submit said bids without knowing which of
the plurality of buyers belong to their vendor pool.
8. The method of claim 7, wherein each of said request for quote includes a
quantity and a price, wherein each of the plurality of buyers is obligated to
purchase the quantity of products identified in their request for quote if the price
in their request for quote is met by a bid from a vendor.
9. An open market network system comprising:

a plurality of buyer client computers for transmitting requests to purchase a product or service;
one or more vendor client computers for transmitting bids to accept the requests to purchase the product or service; and
an intermediary server computer for aggregating the requests of the plurality of buyer client computers and for transmitting real time trade information corresponding to the bids of the one or more vendor client computers to accept the aggregated requests to purchase the product or service.

10. A method for providing an open market network comprising:
aggregating a plurality of buyers' request to purchase a predetermined type of item to form one or more vendor sub-pools of requests, wherein the one or more vendor sub-pools corresponds to one or more vendors that are acceptable to the plurality of buyers receiving bids from one or more vendors to satisfy the sub-pools of requests; wherein each vendor bids on a sub-pool in which the vendor has been determined to be acceptable; and
accepting vendors with the lowest bid to supply each of the plurality of buyers' request.
11. An open market network transaction method comprising:
determining a criterion;
receiving a plurality of buyer purchase requests;
aggregating the plurality of buyer purchase requests based upon the predetermined criterion to form one or more sub-pools of requests; and
transmitting the one or more sub-pools of requests for bidding.
12. An open market network transaction method comprising:

establishing a first set and a second set of criteria;
receiving a plurality of buyer purchase requests;
aggregating the plurality of buyer purchase requests based upon the first
set of criteria to form a first set of sub-pool requests;
excluding one or more buyer purchase requests within the first set of sub-
pool requests based upon the second set of criteria to form a
second set of sub-pool requests; and
receiving bids to supply the second set of sub-pool requests.

13. A method of selling products and services in an open market comprising:
receiving a first aggregated purchase request;
excluding one or more individual buyer requests within the first
aggregated purchase request to form a second aggregated
purchase request;
bidding to supply the second aggregated purchase request.

14. A computer implemented method comprising:
a vendor receiving information regarding a vendor pool, said information
indicating a quantity of products on which that vendor can bid,
wherein the vendor pool is made up of one or more request for
quotes from one or more buyers whose identity is unknown to the
vendor; and
said vendor transmitting a bid.

15. The method of claim 14, wherein the vendor pool is one of several
vendor pools that make up a larger pool of business made up of request for
quotes, and wherein different ones of the vendor pools overlap.

16. A machine readable medium having stored thereon a data structure storing the following:

a pool of business made up of requests for quotes from a plurality of different buyers, each request for quote identifying which of a list of vendors that buyer is willing to accept business from, a quantity of business that buyer is interested in, and a price at which the buyer is obligated to buy said quantity;

for each of the vendors on the list of vendors, data identifying the sum of the quantities of business for which that vendor has been identified in the one or more requests for quotes as being acceptable;

from at least two of the vendors on the list of vendors, a bid to supply; and

data matching vendors to the requests for quote according to the bids.

17. A computer implemented method comprising:

receiving a buyer purchase interest for a set of one or more different items from a buyer;

receiving a preference criteria from the buyer;

receiving a first bid from a first vendor and a second bid from a second vendor, the first bid and the second bid associated with the buyer purchase interest, the second bid being better for the buyer than the first bid without regard to the preference criteria; and

selecting the first bid instead of the second bid as a winning bid based on the preference criteria.

18. The method of claim 17, wherein the first vendor and the second vendor can satisfy the buyer purchase interest, and wherein the first bid and the second bid comprise a price for each item in the set.

19. The method of claim 17, wherein each of the items in the set is associated with a product type or a specific product and a corresponding quantity for the product type or the specific product.

20. The method of claim 17 further comprising receiving a maximum price the buyer is willing to pay for the buyer purchase interest, wherein a bid price associated with the first bid and the second bid is below the maximum price.

21. The method of claim 17, wherein the set of more than one item is a lot.

22. The method of claim 17, wherein selecting the first bid comprises modifying the first bid according to the preference criteria and wherein the modified first bid is better for the buyer than the second bid.

23. The method of claim 22, wherein the first bid and the second bid are currency amounts, and wherein the preference criterion is a percentage of the currency amount.

24. The method of claim 22, wherein the preference criterion is a specific vendor the buyer is willing to enter into a transaction with regardless of the currency amount.

25. The method of claim 22, wherein the modified first bid and the second bid are sorted by sorting the first modified bid and the second bid in an order of lowest-price bid first as calculated based on the buyer purchase interest and the price for each item in the set, wherein the modified first bid is the lowest-price bid.

26. A computer readable medium comprising instructions which, when executed in a processing system, causes the processing system to perform a method for selecting a preferred bid, comprising:

receiving a buyer purchase interest for a set of one or more different items from a buyer;

receiving a preference criteria from the buyer;

receiving a first bid from a first vendor and a second bid from a second vendor, the first bid and the second bid associated with the buyer purchase interest, the second bid being better for the buyer than the first bid without regard to the preference criteria; and

selecting the first bid instead of the second bid as a winning bid based on the preference criteria.

27. The computer readable medium of claim 26, wherein the first vendor and the second vendor can satisfy the buyer purchase interest, and wherein the first bid and the second bid comprises a price for each item in the set

28. The computer readable medium of claim 26, wherein each of the items in the set is associated with a product type or a specific product and a corresponding quantity for the product type or the specific product.

29. The computer readable medium of claim 26 further comprising receiving a maximum price the buyer is willing to pay for the buyer purchase interest, wherein a bid price associated with the first bid and the second bid is below the maximum price.

30. The computer readable medium of claim 26, wherein the set of more than one item is a lot.

31. The computer readable medium of claim 26, wherein selecting the first bid comprises modifying the first bid according to the preference criteria and wherein the modified first bid is better for the buyer than the second bid.
32. The computer readable medium of claim 31, wherein the first bid and the second bid are currency amounts, and wherein the preference criteria is a percentage of the currency amount.
33. The computer readable medium of claim 31, wherein the preference criterion is a specific vendor the buyer is willing to enter into a transaction with regardless of the currency amount.
34. The computer readable medium of claim 33, wherein the modified first bid and the second bid are sorted by sorting the first modified bid and the second bid in an order of lowest-price bid first as calculated based on the buyer purchase interest and the price for each item in the set, wherein the modified first bid is the lowest-price bid.
35. A computer implemented method comprising:
receiving a preference criteria from a buyer in an auction; and
selecting a first bid as a winning bid from a collection of two or more bids, the winning bid determined by applying the buyer's preference criteria to one or more bids from the collection of bids such that without the preference criteria a second bid from the collection of bids would be selected as the winning bid.
36. The computer implemented method of claim 35, further comprising:
receiving a buyer purchase interest from the buyer; and

receiving the collection of two or more bids in response to the buyer purchase interest, each bid received from a different vendor who can satisfy the buyer purchase interest.

37. The computer implemented method of claim 36, wherein the buyer purchase interest comprises of a set of one or more different items, a quantity associated with each item, and a maximum price the buyer is willing to pay for the set.

38. The computer implemented method of claim 37, wherein the item comprises a product type or a specific product.

39. The computer implemented method of claim 35, wherein the preferential criteria comprises a percentage difference, a currency difference, or a feature difference above the second bid the buyer is willing to accept for the first bid.

40. A computer readable medium comprising instructions which, when executed in a processing system, causes the processing system to perform a method for selecting a preferred bid, comprising:

receiving a preference criteria from a buyer in an auction; and
selecting a first bid as a winning bid from a collection of two or more bids, the winning bid determined by applying the buyer's preference criteria to one or more bids from the collection of bids such that without the preference criteria a second bid from the collection of bids would be selected as the winning bid.

41. The computer readable medium of claim 40, further comprising:
receiving a buyer purchase interest from the buyer; and

receiving the collection of two or more bids in response to the buyer purchase interest, each bid received from a different vendor capable of satisfying the buyer purchase interest.

42. The computer readable medium of claim 40, wherein the purchase interest comprises of a set of one or more items, a quantity associated with the item, and a maximum price the buyer is willing to pay for the set.

43. The computer readable medium of claim 42, wherein the item comprises a product type or a specific product.

44. The computer readable medium of claim 40, wherein the preferential criteria comprises a percentage difference, a currency difference, or a feature difference above the second bid the buyer is willing to accept for the first bid.

45. A computer implemented method comprising:
receiving from a buyer a percentage preference for a first vendor over a second vendor;
receiving a first bid and a second bid respectively from the first vendor and the second vendor for a sale to the buyer, wherein the second bid is lower than the first bid, but the first bid is within the percentage preference of the second bid; and
selecting the first bid over said second bid.

46. The method of claim 45, further comprising receiving a buyer purchase interest from the buyer, wherein the sale to the buyer is associated with the buyer purchase interest.

47. The method of claim 46, wherein the buyer purchase interest comprises a set of one or more different items, a quantity associated with each item, and a maximum price the buyer is willing to pay for the set.
48. The method of claim 47, wherein the item comprises a product type or a specific product.
49. A computer readable medium comprising instructions which, when executed in a processing system, causes the processing system to perform a method for selecting a preferred bid, comprising:
- receiving from a buyer a percentage preference for a first vendor over a second vendor;
 - receiving a first bid and a second bid respectively from the first vendor and the second vendor for a sale to the buyer, wherein the second bid is lower than the first bid, but the first bid is within the percentage preference of the second bid; and
 - selecting the first bid over the second bid.
50. The computer readable medium of claim 49, further comprising receiving a buyer purchase interest from the buyer, wherein the sale to the buyer is associated with the buyer purchase interest.
51. The computer readable medium of claim 50, wherein the buyer purchase interest comprises a set of one or more different items, a quantity associated with each item, and a maximum price the buyer is willing to pay for the set.
52. The computer readable medium of claim 51, wherein the item comprises a product type or a specific product.

53. A computer system comprising:
a first logic to receive a preference criteria from a buyer, the preference criteria corresponding to a buyer purchase interest;
a second logic to receive a first bid from a first vendor and a second bid from a second vendor, wherein the second bid would be a winning bid if the buyer did not specify the preference criteria; and
a third logic to select the first bid as the winning bid.
54. The computer system of claim 53, wherein the first vendor and the second vendor can satisfy the buyer purchase interest for a set of one or more different items.
55. The computer system of claim 54, wherein the item is associated with a product type or a specific product and a corresponding quantity for the product type or the specific product.
56. The computer system of claim 54, wherein the set comprises a maximum price the buyer is willing to pay for the set.
57. The method of claim 53, wherein the third logic is configured to modify the first bid according to the preference criteria and wherein the modified first bid is better for the buyer than the second bid.
58. An apparatus comprising:
a first input configured to receive a preference criteria from a buyer, the preference criteria associated with a buyer purchase interest provided by the buyer;

a second input configured to receive one or more bids to satisfy the buyer purchase interest, the bids comprising a first bid and a second bid;
and
a processor coupled to the first input and the second input, the processor configured to apply the preferential criteria and select the first bid over the second bid.

59. The apparatus of claim 58, wherein the buyer purchase interest comprises a set of one or more different items, and wherein the item comprises a product type or a specific product.

60. The apparatus of claim 59, wherein the buyer purchase interest further comprises a maximum price the buyer is willing to pay for the set, and wherein both the first bid and the second bid satisfy the maximum price.

61. The apparatus of claim 58, wherein the processor would select the second bid over the first bid if the preference criterion does not make the first bid a better bid.

62. An apparatus comprising:
means for receiving a preference criteria from a buyer, the preference criteria associated with a buyer purchase interest specified by the buyer;
means for receiving one or more bids to satisfy the buyer purchase interest, the bids comprising a first bid and a second bid; and
means for applying the preferential criteria and selecting the first bid over the second bid.

63. The apparatus of claim 62, wherein the buyer purchase interest comprises a set of one or more different items, and wherein the item comprises a product type or a specific product.
64. The apparatus of claim 63, wherein the buyer purchase interest further comprises a maximum price the buyer is willing to pay for the set, and wherein both the first bid and the second bid satisfy the maximum price.
65. The apparatus of claim 62, wherein the second bid would be selected over the first bid if the buyer did not specify the preferential criteria or if applying the preferential criteria fails to make the first bid better than the second bid.
66. A method comprising:
receiving input from each of a first and second buyer that individually identifies a buyer purchase interest from each of the buyers, the buyer purchase interest including one or more different items, each of the items representing a specific product or a product type, where the buyer purchase interest from the first buyer and the second buyer indicate the one or more items that the buyer desires to purchase;
accepting bids from a first and second vendors, each bid offering to supply one or more different items identified by the buyer purchase interests from the first and the second buyer; and
matching the bids from the first and second vendors to the buyer purchase interest from the first and second buyer.
67. The method of claim 66, wherein the buyer purchase interest is associated with a lot having one or more items, each item in the lot having a quantity

desired by the buyer, and each item being associated with a maximum price the buyer is willing to pay for the item.

68. The method of claim 66, wherein the bid comprises one or more item bids, each item bid corresponding to the item in the lot, wherein each item bid having a unit price for that item in the lot.

69. The method of claim 66, wherein the product type comprises of one or more different specific products, and wherein a difference among the specific products comprises of a brand.

70. The method of claim 66, wherein matching the bids comprises:
for each buyer, selecting one or more bids that supply all of the items in
buyer purchase interest from that buyer; and
sorting the selected bids for each of the buyers according to a bid sort
criteria.

71. The method of claim 70, wherein the bid sort criteria is based on a bid price associated with each bid, the bid price calculated based on the quantity of each item in the buyer purchase interest and the unit price corresponding to each item.

72. The method of claim 70 further comprising assigning a lowest bid price associated with the buyer purchase interest to the corresponding buyer.

73. The method of claim 66, wherein the buyers are sorted according to a time when each buyer provides the buyer purchase interest.

74. The method of claim 70, wherein each of the sorted bids is a bid bracket, and wherein each buyer can have zero or more associated bid brackets.

75. The method of claim 74, wherein the bid bracket comprises a target sales range, the target sales range being between a minimum sales and a maximum sales that the corresponding vendor is willing to sell the bid items at the specified unit price.

76. The method of claim 75, wherein the bid bracket further comprises a current gross sales value, the current gross sales value being a sum of products of the maximum price for each item in the buyer purchase interest and the corresponding quantity desired by the buyer, wherein the gross sales value is measured against the target sales range to determine if the bid bracket is satisfied.

77. The method of claim 76 wherein an aggregate of the buyer purchase interest from one or more buyers having similar items can be assigned to the same bid bracket such that the current gross sales value can be within the target sales range.

78. The method of claim 77 wherein the buyer purchase interest is satisfied by one vendor, and wherein one vendor can satisfy one or more buyer purchase interest.

79. A machine-readable medium providing instructions, which when executed by a set of one or more processors, cause said set of processors to perform the following:

receiving input from each of a first and second buyer that individually identifies a buyer purchase interest from each of the buyers, the

buyer purchase interest including one or more different items, each of the items representing a specific product or a product type, where the buyer purchase interest from the first buyer and the second buyer indicate the one or more items that the buyer desires to purchase;

accepting bids from a first and second vendors, each bid offering to supply one or more different items identified by the buyer purchase interests from the first and the second buyer; and matching the bids from the first and second vendors to the buyer purchase interest from the first and second buyer.

80. The machine-readable medium of claim 79, wherein the buyer purchase interest is associated with a lot having one or more items, each item in the lot having a quantity desired by the buyer, and each item being associated with a maximum price the buyer is willing to pay for the item.

81. The machine-readable medium of claim 79, wherein the bid comprises one or more item bids, each item bid corresponding to the item in the lot, wherein each item bid having a unit price for that item in the lot.

82. The machine-readable medium of claim 79, wherein the product type comprises of one or more different specific products, and wherein a difference among the specific products comprises of a brand.

83. The machine-readable medium of claim 79, wherein matching the bids comprises:

for each buyer, selecting one or more bids that supply all of the items in buyer purchase interest from that buyer; and
sorting the selected bids for each of the buyers according to a bid sort criteria.

84. The machine-readable medium of claim 83, wherein the bid sort criteria is based on a bid price associated with each bid, the bid price calculated based on the quantity of each item in the buyer purchase interest and the unit price corresponding to each item.

85. The machine-readable medium of claim 83 further comprising assigning a lowest bid price associated with the buyer purchase interest to the corresponding buyer.

86. The machine-readable medium of claim 79, wherein the buyers are sorted according to a time when each buyer provides the buyer purchase interest.

87. The machine-readable medium of claim 83, wherein each of the sorted bids is a bid bracket, and wherein each buyer can have zero or more associated bid brackets.

88. The machine-readable medium of claim 87, wherein the bid bracket comprises a target sales range, the target sales range being between a minimum sales and a maximum sales that the corresponding vendor is willing to sell the bid items at the specified unit price.

89. The machine-readable medium of claim 88, wherein the bid bracket further comprises a current gross sales value, the current gross sales value being a sum of products of the maximum price for each item in the buyer purchase

interest and the corresponding quantity desired by the buyer, wherein the gross sales value is measured against the target sales range to determine if the bid bracket is satisfied.

90. The machine-readable medium of claim 89, wherein an aggregate of the buyer purchase interest from one or more buyers having similar items can be assigned to the same bid bracket such that the current gross sales value can be within the target sales range.

91. The machine-readable medium of claim 90, wherein the buyer purchase interest is satisfied by only one vendor, and wherein one vendor can satisfy one or more buyer purchase interest.

92. A method comprising:
generating a lot for a first buyer;
receiving from the first buyer input that specifies one or more lot items in the lot that the first buyer wishes to purchase, the lot item comprising of a specific product and a product type, wherein the product type comprises of one or more different specific products any one of which is considered to be acceptable by the first buyer.

93. The method of claim 92 further comprising:
determining a set of one or more vendors who individually supplies all of the lot items specified by the first buyer; and
providing each vendor in the set of vendors an opportunity to submit a bid to supply one or more lot items specified by the first buyer.

94. The method of claim 93, wherein each lot item is associated with a quantity desired by the first buyer and a maximum price the first buyer is willing

to pay for the lot item, and wherein each vendor in the set of vendors can supply at least the quantity for each of the lot items in the lot.

95. The method of claim 93, wherein the bid comprises a unit price for each lot item, and wherein the bid is associated with a target sales range which if met can obligate the vendor to supply the lot items at the specified unit price in the quantity desired by the first buyer, wherein the target sales range is a range between a minimum sales range and a maximum sales range.

96. The method of claim 95, where the bid is further associated with a current gross sales value calculated based on the sum of the products of the quantity of each lot item and the maximum price the first buyer is willing to pay for each lot item, and wherein the current gross sales value is used to determine if the target sales range is met.

97. The method of claim 95 wherein each bid is further associated with a bid price calculated based on the sum of the products of the quantity of each lot item and the unit price for each lot item.

98. The method of claim 97, wherein the vendor having a lowest value bid price is assigned to the first buyer.

99. The method of claim 92, further comprising generating a lot for a second buyer to accept lot items received from the second buyer, wherein the second buyer is assigned to the same vendor as the first buyer if the lot items received from the second buyer are similar to the lot items received from the first buyer and if a combined current gross sales value does not exceed the maximum sales range.

100. The method of claim 99, wherein the combined current gross sales value is the current gross sales value calculated based on the lot items from the first buyer and the lot items from the second buyer, wherein the each of the lot items from the second buyer is associated with a corresponding maximum price the second buyer is willing to pay for the lot item.

101. A machine-readable medium providing instructions, which when executed by a set of one or more processors, cause said set of processors to perform the following:

- generating a lot for a first buyer;
- receiving from the first buyer input that specifies one or more lot items in the lot that the first buyer wishes to purchase, the lot item comprising of a specific product, and a product type of similar products, wherein the product type comprises of one or more specific products any one of which is considered to be acceptable by the first buyer.

102. The machine-readable medium of claim 101 further comprising:

- determining a set of one or more vendors who individually supplies all of the lot items specified by the first buyer; and
- providing each vendor in the set of vendors an opportunity to submit a bid to supply one or more lot items specified by the first buyer.

103. The machine-readable medium of claim 102, wherein each lot item is associated with a quantity desired by the first buyer and a maximum price the first buyer is willing to pay for the lot item, and wherein each vendor in the set of vendors can supply at least the quantity for each of the lot items in the lot.

104. The machine-readable medium of claim 102, wherein the bid comprises a unit price for each lot item, and wherein the bid is associated with a target sales range which if met can obligate the vendor to supply the lot items at the specified unit price in the quantity desired by the first buyer, wherein the target sales range is a range between a minimum sales range and a maximum sales range.

105. The machine-readable medium of claim 104, where the bid is further associated with a current gross sales value calculated based on the sum of the products of the quantity of each lot item and the maximum price the first buyer is willing to pay for each lot item, and wherein the current gross sales value is used to determine if the target sales range is met.

106. The machine-readable medium of claim 104 wherein each bid is further associated with a bid price calculated based on the sum of the products of the quantity of each lot item and the unit price for each lot item.

107. The machine-readable medium of claim 106, wherein the vendor having a lowest value bid price is assigned to the first buyer.

108. The machine-readable medium of claim 101, further comprising generating a lot for a second buyer to accept lot items received from the second buyer, wherein the second buyer is assigned to the same vendor as the first buyer if the lot items received from the second buyer are similar to the lot items received from the first buyer and if a combined gross sales value does not exceed the maximum sales range.

109. The machine-readable medium of claim 108, wherein the combined current gross sales value is the current gross sales value calculated based on the lot items from the first buyer and the lot items from the second buyer, wherein

the each of the lot items from the second buyer is associated with a corresponding maximum price the second buyer is willing to pay for the lot item.

110. A method comprising:

generating a lot including one or more different lot items, each of the lot items designating a specific product or a class of two or more specific products of the same product type, where each of the specific products is supplied by one or more vendors;
receiving buyer purchase interest from a plurality of different buyers, the buyer purchase interest indicating one or more different lot items they are interested in purchasing;
determining a vendor subpool for each vendor, the vendor subpool comprising of a set of one or more buyers, the vendor offering the lot items that satisfy the buyer purchase request of each of the buyers in the set, wherein different vendor subpools can overlap;
and
running an auction for the vendors whose vendor subpool includes one or more buyers.

111. The method of claim 110, further comprising:

wherein the vendors bid for the buyer purchase interest from the buyers in the vendor subpool without knowing the buyers that make up the vendor subpool.

112. The method of claim 110, wherein the buyer purchase interest from one or more buyers in the vendor subpool can be supplied by the corresponding vendor if a vendor target sales range set by the vendor is met.

113. The method of claim 110, wherein each of the lot items in the buyer purchase interest is associated with a maximum price the buyer is willing to pay and a quantity desired by the buyer, and wherein the vendor is selected to supply the buyer purchase interest if the vendor can offer the supply at or below a maximum price the buyer is willing to pay for the buyer purchase interest.

114. The method of claim 113, wherein the maximum price the buyer is willing to pay for the buyer purchase interest is calculated based on the sum of the products of the quantity for each lot item and the maximum price for each lot item.

115. A machine-readable medium providing instructions, which when executed by a set of one or more processors, cause said set of processors to perform the following:

- generating a lot including one or more different lot items, each of the lot items designating a specific product or a class of two or more specific products of the same product type, where each of the specific products is supplied by one or more vendors;
- receiving buyer purchase interest from a plurality of different buyers, the buyer purchase interest indicating one or more different lot items they are interested in purchasing;
- determining a vendor subpool for each vendor, the vendor subpool comprising of a set of one or more buyers, the vendor offering the lot items that satisfy the buyer purchase request of each of the buyers in the set, wherein different vendor subpools can overlap;
- and
- running an auction for the vendors whose vendor subpool includes one or more buyers.

116. The machine-readable medium of claim 115, further comprising:
wherein the vendors bid for the buyer purchase interest from the buyers
in the vendor subpool without knowing the buyers that make up
the vendor subpool.
117. The machine-readable medium of claim 115, wherein the buyer purchase
interest from one or more buyers in the vendor subpool can be supplied by the
corresponding vendor if a vendor target sales range set by the vendor is met.
118. The machine-readable medium of claim 115, wherein each of the lot
items in the buyer purchase interest is associated with a maximum price the
buyer is willing to pay and a quantity desired by the buyer, and wherein the
vendor is selected to supply the buyer purchase interest if the vendor can offer
the supply at or below a maximum price the buyer is willing to pay for the buyer
purchase interest.
119. The machine-readable medium of claim 113, wherein the maximum price
the buyer is willing to pay for the buyer purchase interest is calculated based on
the sum of the products of the quantity for each lot item and the maximum price
for each lot item.
120. A machine-readable medium having stored thereon the following data:
data identifying a plurality of buyers;
associated with each of said plurality of buyers is data identifying a group
of lot items that the buyer is interested in purchasing, wherein the
data for each lot item specifies one or more specific products that
that buyer has indicated an interest in purchasing and a quantity;
data identifying a plurality of vendors; and

associated with each of said plurality of vendors is data identifying a bid bracket, each of said bid brackets specifies which of the specific products that vendor is willing to supply, a bid, and a minimum criteria for the bid.

121. The machine-readable medium of claim 120, wherein the data for each lot item specifies a maximum price the buyer has agreed to purchase the specified quantity of product.

122. The machine-readable medium of claim 120, wherein different ones of the buyers are matched to different ones of the bid brackets, and wherein each of said bid brackets also has a current gross sales location to store the gross sales calculated based on the current matching, the matched assigned buyer's prices for the specific products that vendor is offering, the quantity of those products indicated by the matched assigned buyers.

123. The machine-readable medium of claim 120, wherein the minimum criteria is a value to be compared to value to be stored in the current gross sales location.

124. The machine-readable medium of claim 120, wherein each of said bid brackets also has a current sales location to store that actual amount of sales current allocated to the vendor based on the current matching.

125. A computer system, comprising:
a bus;
a data storage device coupled to the bus; and
a processor coupled to the data storage device, the processor operable to receive instructions which, when executed by the processor, cause

the processor to perform a method comprising:

generating a lot including one or more different lot items, each of the lot

items designating a specific product or a class of two or more

specific products of the same product type, where each of the

specific products is supplied by one or more vendors;

receiving buyer purchase interest from a plurality of different buyers, the

buyer purchase interest indicating one or more different lot items

they are interested in purchasing;

determining a vendor subpool for each vendor, the vendor subpool

comprising of a set of one or more buyers, the vendor offering

the lot items that satisfy the buyer purchase request of each of the

buyers in the set, wherein different vendor subpools can overlap;

and

running an auction for the vendors whose vendor subpool includes one or more buyers.

126. The computer system of claim 125, further comprising:

wherein the vendors bid for the buyer purchase interest from the buyers

in the vendor subpool without knowing the buyers that make up

the vendor subpool.

127. The computer system of claim 125, wherein the buyer purchase interest

from one or more buyers in the vendor subpool can be supplied by the

corresponding vendor if a vendor target sales range set by the vendor is met.

128. The computer system of claim 125, wherein each of the lot items in the

buyer purchase interest is associated with a maximum price the buyer is willing

to pay and a quantity desired by the buyer, and wherein the vendor is selected to

supply the buyer purchase interest if the vendor can offer the supply at or below a maximum price the buyer is willing to pay for the buyer purchase interest.

129. The computer system of claim 128, wherein the maximum price the buyer is willing to pay for the buyer purchase interest is calculated based on the sum of the products of the quantity for each lot item and the maximum price for each lot item.

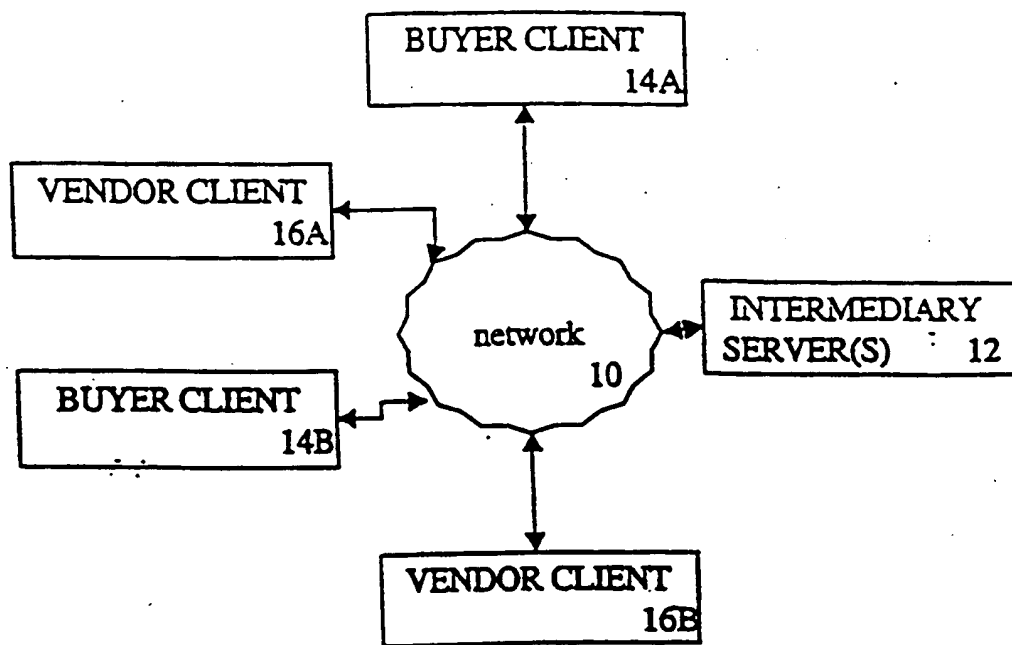


FIG. 1

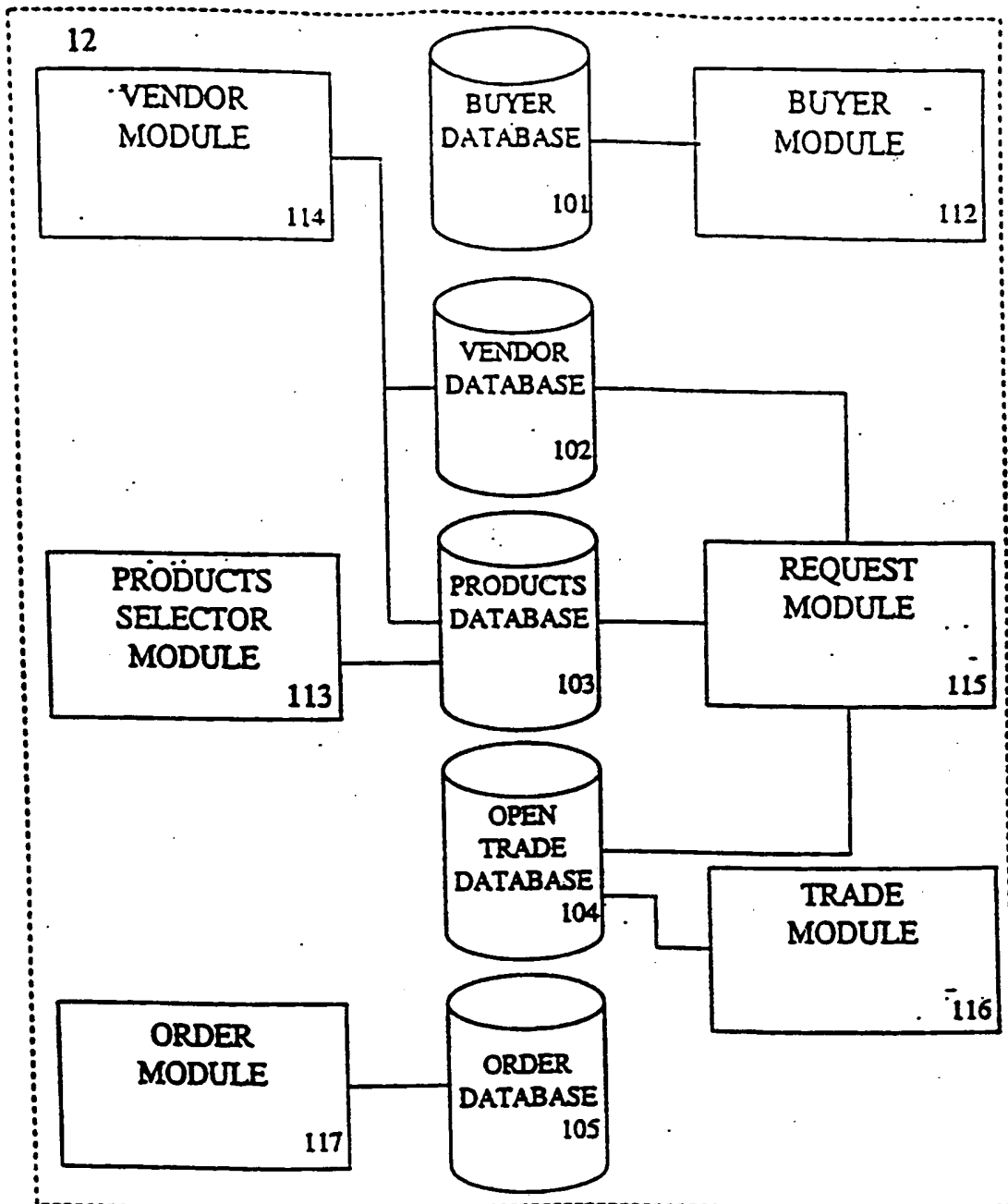


FIG. 2

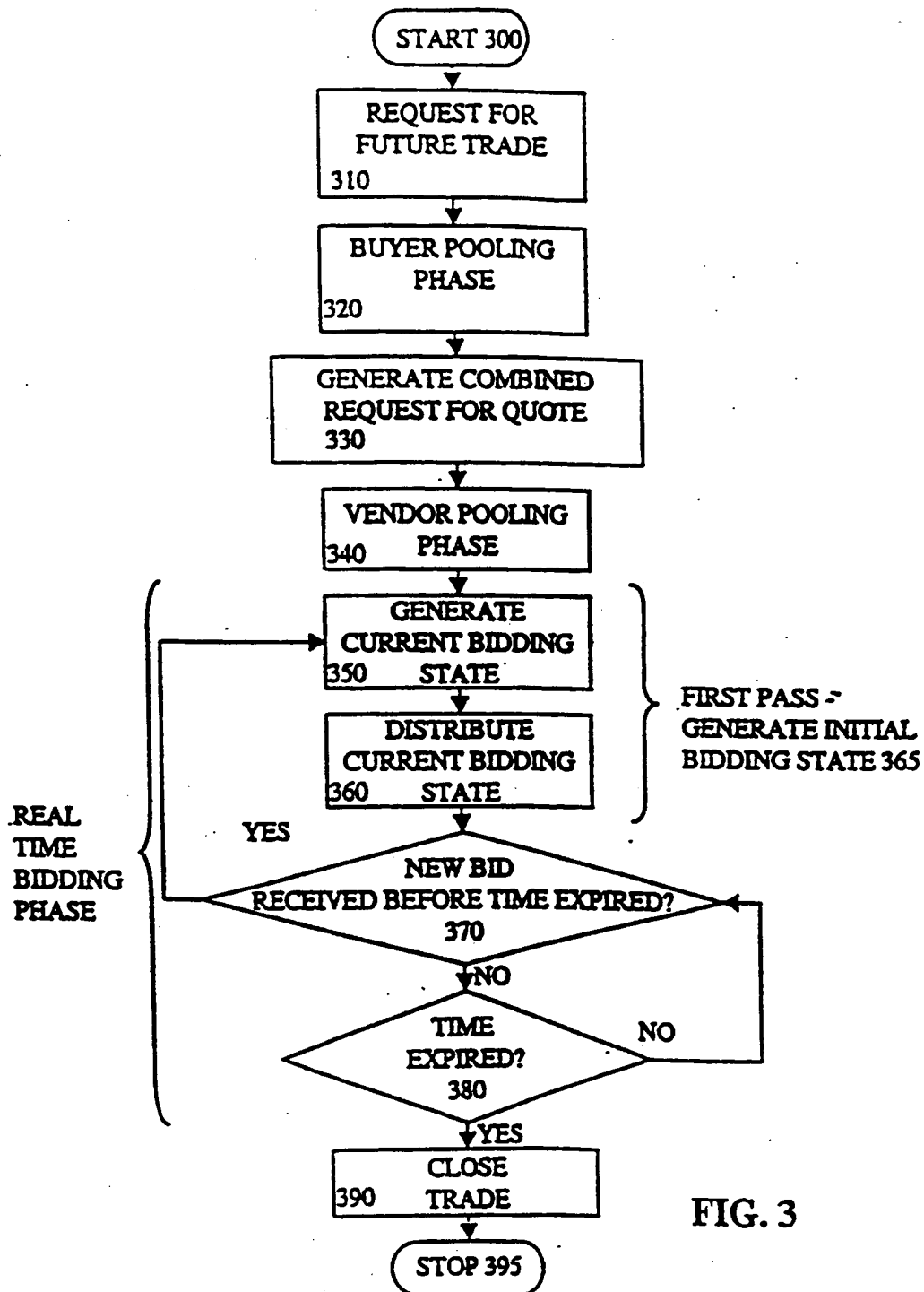
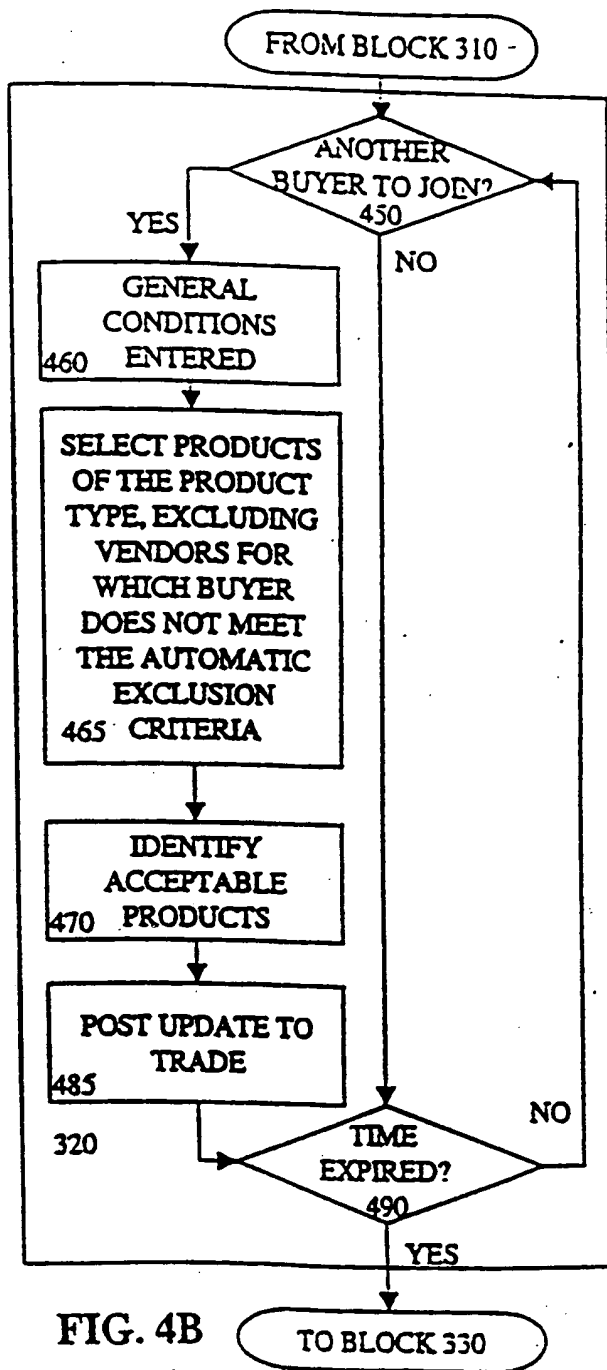
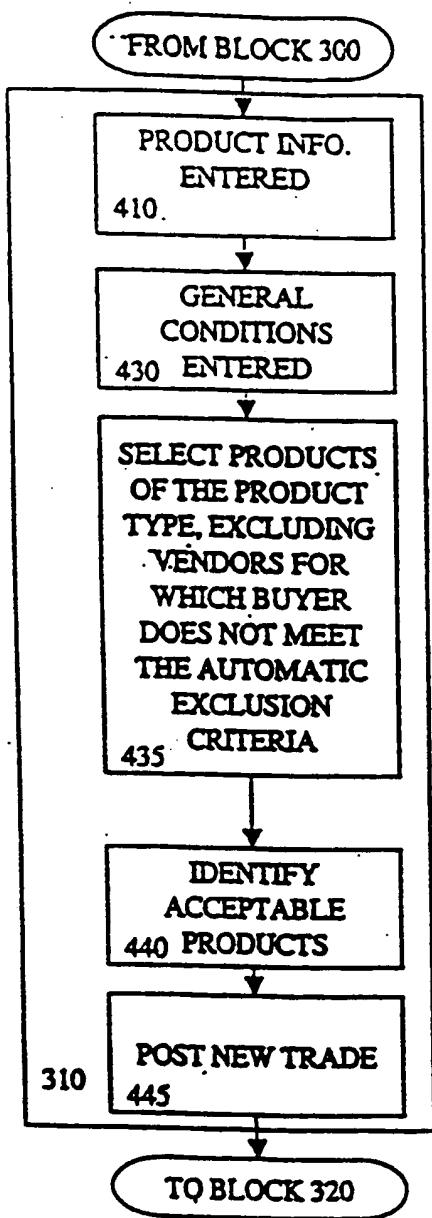


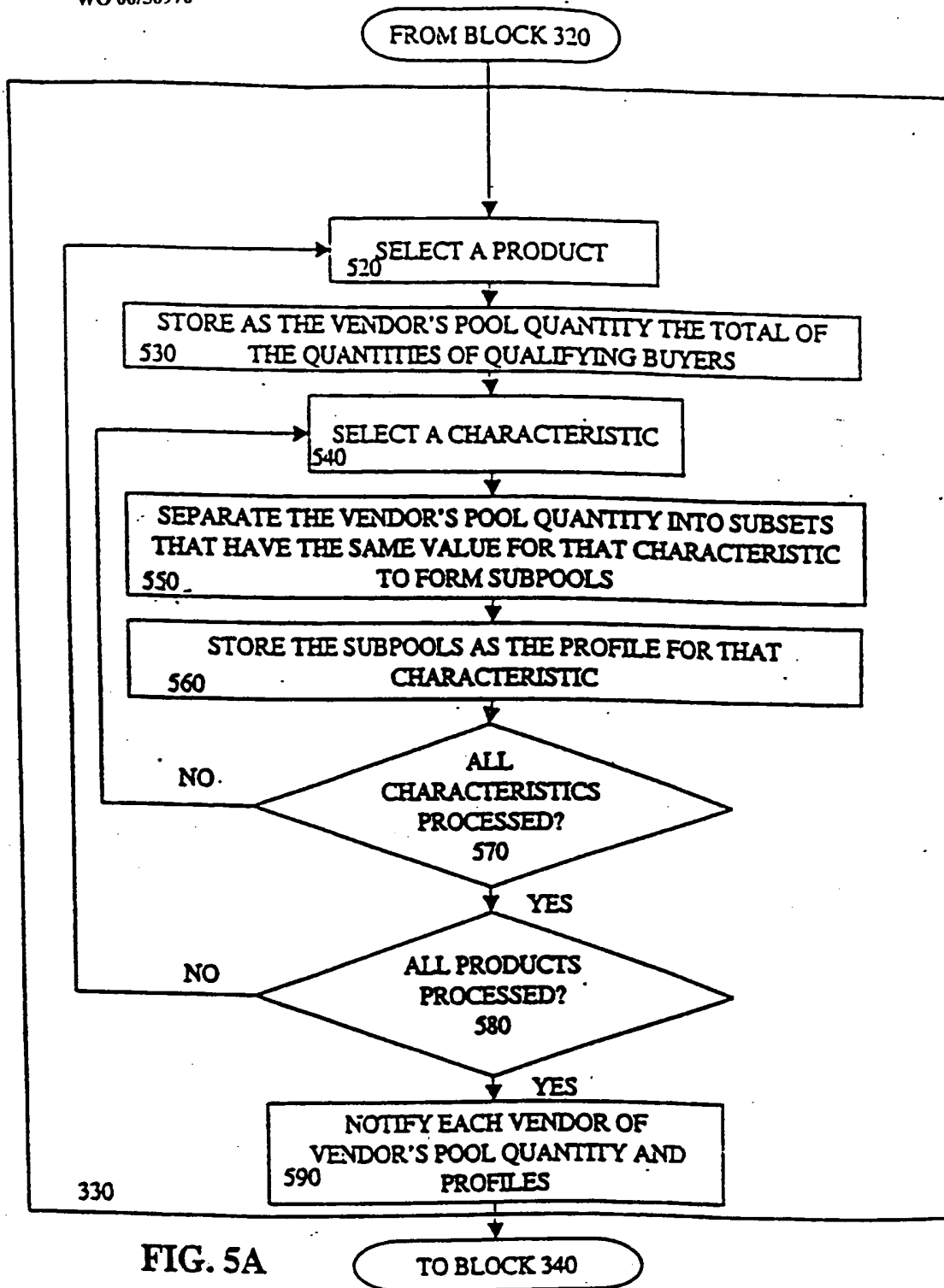
FIG. 3



CHARACTERISTICS

	QUAN.	VENDOR 1		VENDOR 2		VENDOR 3		COMMITMENT PRICE	GEO-GRAPHY	TIMING	...	...
		PRODUCT 1	PRODUCT 2	PRODUCT 3	PRODUCT 4	PRODUCT 3	PRODUCT 4					
BUYER 1	500	Y	Y	Y	N	Y	N	\$16	CA	Q1	...	
BUYER 2	800	N	Y	Y	N	N	N	\$15	TX	Q1	...	
BUYER 3	1000	Y	Y	Y	N	Y	N	\$14	CA	Q2	...	
AUTO EXCLUSIONS BY CHAR.: GEOGRAPHY TIMING						TX		..				

FIGURE 4C



CHARACTERISTICS

	QUAN.	VENDOR 1	VENDOR 2	VENDOR 3		COMMITMENT PRICE	GEO- GRAPHY	TIMING	...	...
		PRODUCT 1	PRODUCT 2	PRODUCT 3	PRODUCT 4					
BUYER 1	500	Y	Y	Y	N	\$16	CA	Q1	...	...
BUYER 2	800	N	Y	N	N	\$15	TX	Q1	...	...
BUYER 3	1000	Y	Y	Y	N	\$14	CA	Q2	...	...
AUTO EXCLUSIONS BY CHAR.: GEOGRAPHY TIMING				TX						
POOL	2300	1500	2300	1500	Q					
QUANTITY					Q					
GEOGRAPHY		CA=1500	CA=1500 TX=800	CA=1500	Q					
PROFILE		Q1=500 Q2=1000	Q1=1300 Q2=1000	Q1=500 Q2=1000	Q					
TIMING										
PROFILE										
ETC.										

FIGURE 5B

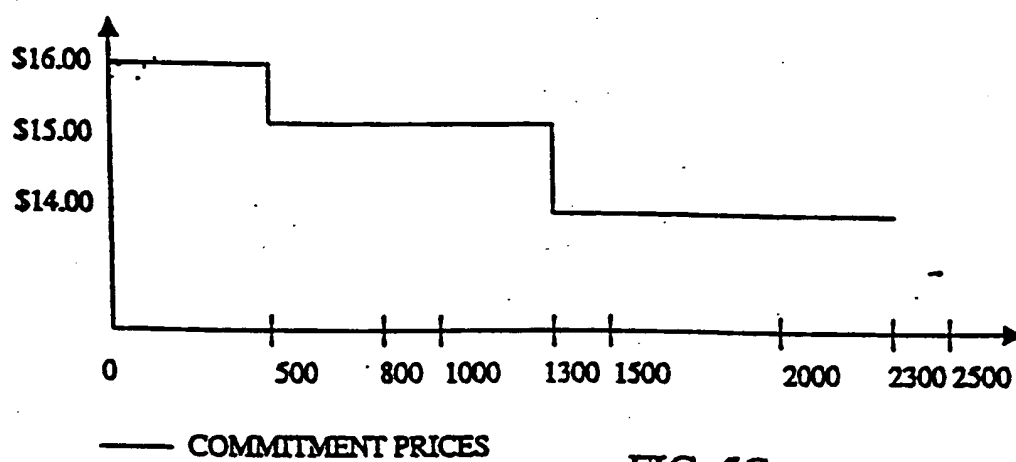


FIG. 5C

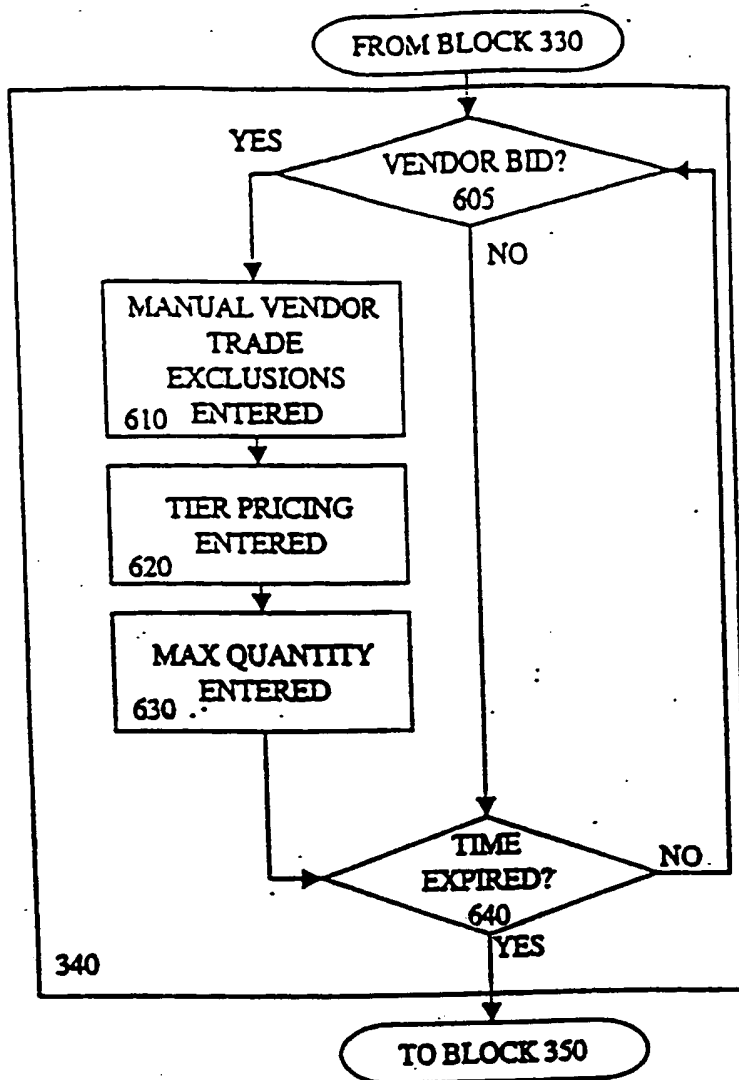


FIG. 6A

CHARACTERISTICS

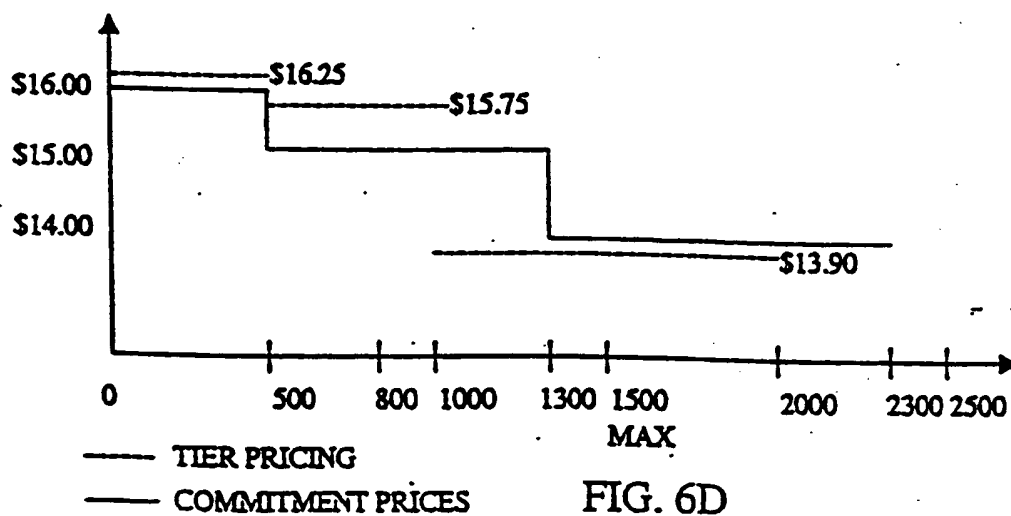
	QUAN.	VENDOR 1	VENDOR 2	VENDOR 3		COMMITMENT PRICE	GEO- GRAPHY	TIMING	...	...
		PRODUCT 1	PRODUCT 2	PRODUCT 3	PRODUCT 4					
BUYER 1	500	Y	Y	Y	N	\$16	CA	Q1	...	...
BUYER 2	800	N	Y	N	N	\$15	TX	Q1	...	...
BUYER 3	1000	YN	Y	Y	N	\$14	CA	Q2	...	...
POOL	2300	1500	2300	1500	0					
QUANTITY		500								
GEOGRAPHY		GA=1500	CA=1500	CA=1500	0					
PROFILE		CA=500	TX=800							
TIMING		Q1=500	Q1=1300	Q1=500	0					
PROFILE		Q2=1000	Q2=1000	Q2=1000						
MANUAL EXCLUSIONS BY CIAR.:										
GEOGRAPHY		Q2								
TIMING										
ETC.										
TIER PRICING AND MAX QUANTITY		SEE EXAMPLE FIGURE 6C	SEE EXAMPLE FIGURE 6C	SEE EXAMPLE FIGURE 6C						
ETC.										

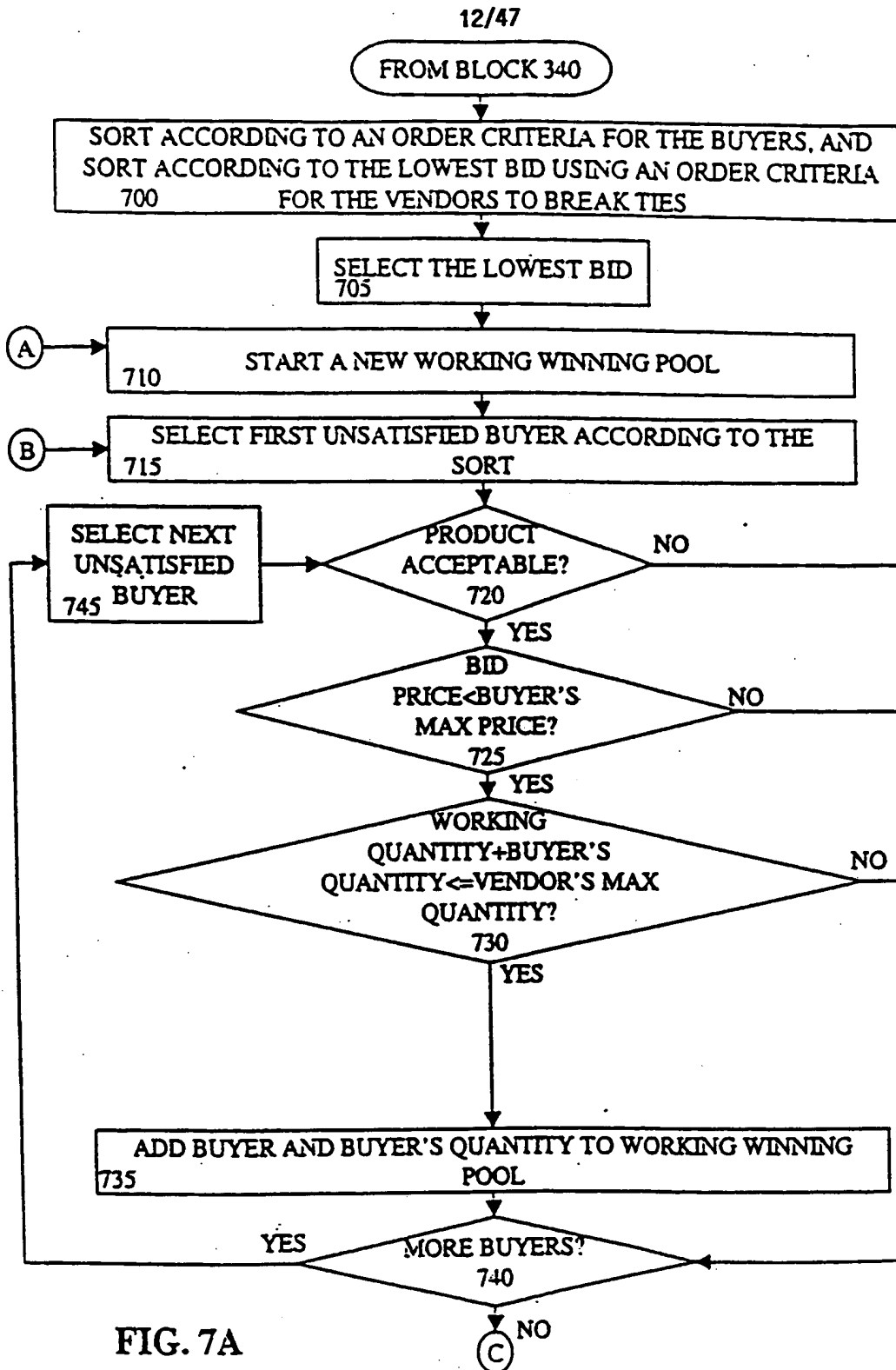
FIGURE 6B

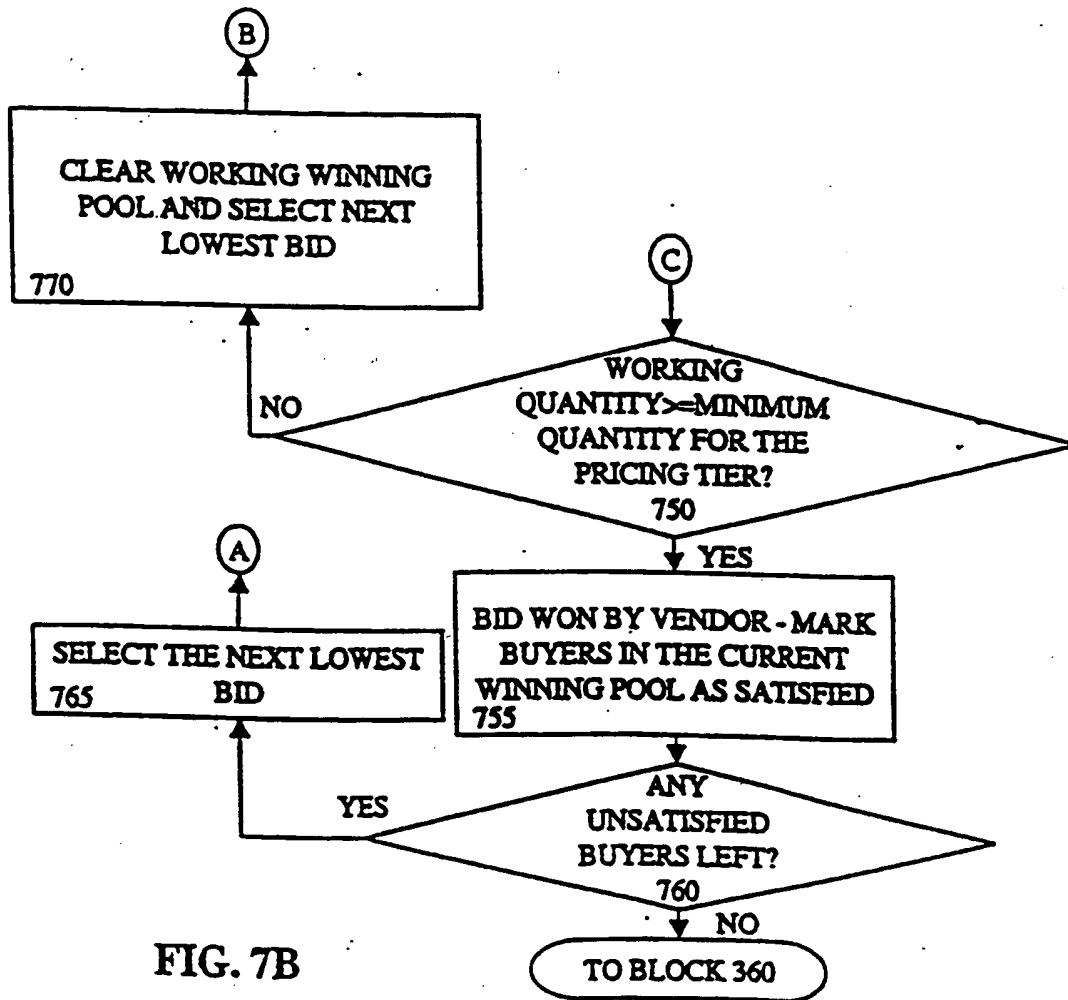
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	QUANTITY RANGE	UNIT ACQUISITION PRICE	SERVICE	TOTAL
PRICE 1	0 -499	\$11.25	\$5	\$16.25
PRICE 2	500-999	\$10.75	\$5	\$15.75
PRICE 3	1000-2000	\$9.90	\$4	\$13.90
MAX. Q	1500			

FIG. 6C







	SATISFIED
BUYER 1	NO
BUYER 2	NO
BUYER 3	NO

FIG. 7C

WORKING WINNING POOL FOR PRODUCT 1 BID PRICE OF \$13.90 FOR 1000- 2000 UNITS		QUANTITY
	BUYER 1	500
TOTAL		500

FIG. 7D

	SATISFIED
BUYER 1	NO
BUYER 2	NO
BUYER 3	NO

FIG. 7E

WORKING WINNING POOL FOR PRODUCT 2 BID PRICE OF \$13.90 FOR 1000- 2000 UNITS		QUANTITY
	BUYER 1	500
	BUYER 2	800
TOTAL		1300

FIG. 7F

	SATISFIED
BUYER 1	NO YES
BUYER 2	NO YES
BUYER 3	NO

FIG. 7G

WORKING WINNING POOL FOR PRODUCT 3 BID PRICE OF \$13.90 FOR 1000- 2000 UNITS		QUANTITY
	BUYER 3	1000
TOTAL		1000

FIG. 7H

	SATISFIED
BUYER 1	YES
BUYER 2	YES
BUYER 3	NO YES

FIG. 7I

	BUYERS	QUANTITY	PRICE
PRODUCT 1	-	-	-
PRODUCT 2	BUYER 1 AND BUYER 2	1300	\$13.90
PRODUCT 3	BUYER 3	1000	\$13.90
PRODUCT 4	-	-	-

FIG. 7J

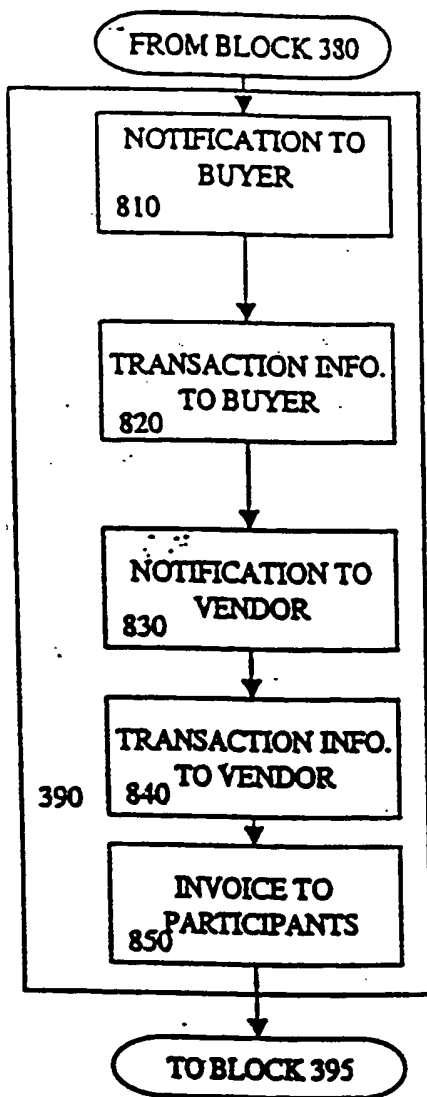


FIG. 8

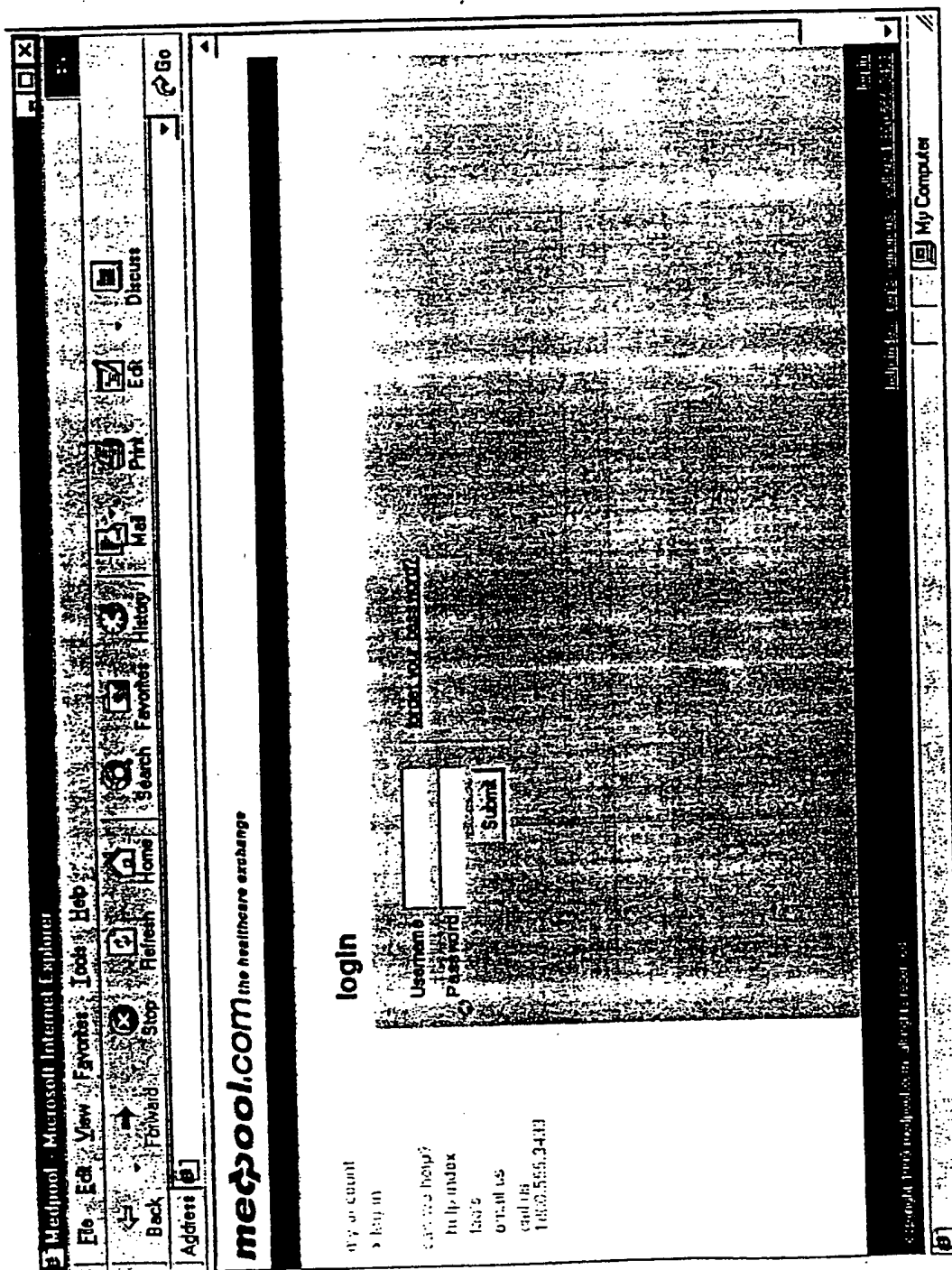
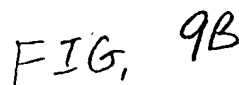


FIG. 9A



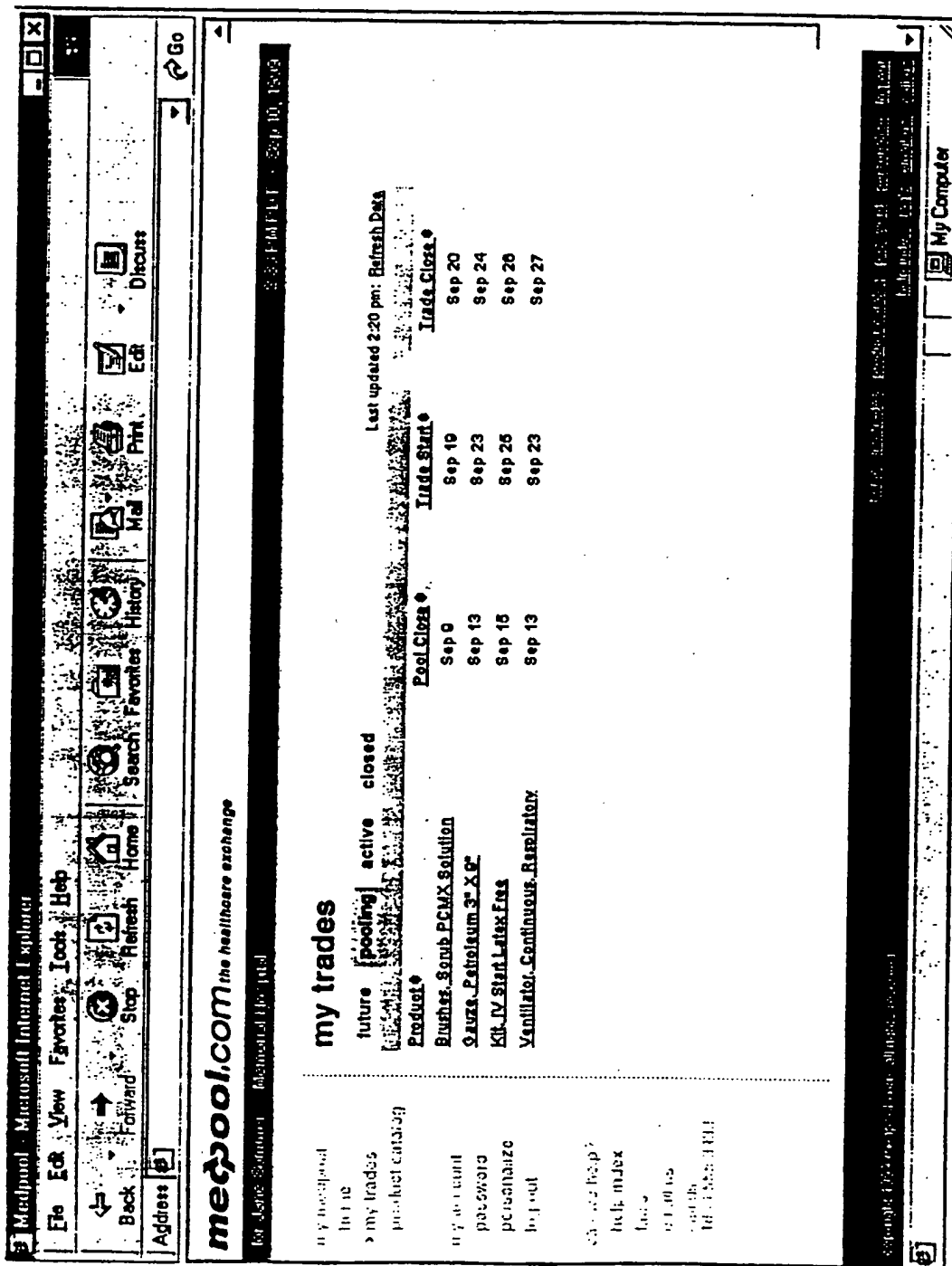


FIG. 9C.

19/47

me2pool.com the secure exchange

To: John C. Smith Member ID: 1001001

2000-01-01 10:00:00

my trades

future pooling active closed

last updated 2:20 pm: Refresh Data

my trades

future pooling active closed

Last updated 2:20 pm: Refresh Data

Future Trades > Join Trade

Ventilator, Continuous, Respiratory

Step 1: Review Trade Information

Pool Class: Sep 13, 1999

Current Pooled Volume: 250 units

Trade Start: Sep 23, 1999, 8:00 AM

Trade Close: Sep 27, 1999, 2:00 PM

Step 2: Enter Order Information

All information required. See product price history.

Acquisition price per unit	\$34,500.00
Installation price per unit	\$0.00
Maximum price per unit	\$34,500.00
Desired Quantity	10
Maximum price for total order	\$345,000.00
Payment Term	-Select-
Shipping time (in days) with vendor after trade	
Ship Start	Nov 2 1999
Ship End	Nov 2 1999
Delivery @ Ship date	
<input type="radio"/> Select standard delivery <input type="radio"/> Select expedited delivery	-select-

Step 3: Choose Vendors

Below are all of the vendors that match your profile. Select the vendors you want to work with in this trade. Only one vendor will win your business.

See information about how we qualify vendors and how you can contribute to ratings.

Ratings are based on a scale of 1 to 5 stars.

Select	Vendors	Pick Models/ Catalog Number	Premium Price <input type="checkbox"/>	Community Ratings <input type="checkbox"/>
<input checked="" type="checkbox"/>	Dräger	<input type="checkbox"/> 550 <input checked="" type="checkbox"/> 650	<input type="checkbox"/> X	4.5 stars (5 members)
<input checked="" type="checkbox"/>	Holick/Puritan Bennett (Mallinckrodt, Inc.)	<input type="checkbox"/> 740 <input checked="" type="checkbox"/> 840	<input type="checkbox"/> X	4.5 stars (3 members)
<input checked="" type="checkbox"/>	Ohmeda	<input type="checkbox"/> 2000 <input checked="" type="checkbox"/> 2300	<input type="checkbox"/> X	4.5 stars (8 members)
<input checked="" type="checkbox"/>	Sechrist Industries	<input type="checkbox"/> 1600 <input checked="" type="checkbox"/> 1800	<input type="checkbox"/> X	4.5 stars (8 members)
<input checked="" type="checkbox"/>	Siemens	<input type="checkbox"/> 300 <input checked="" type="checkbox"/> 300	<input type="checkbox"/> X	4.5 stars (8 members)

Step 4: Additional Comments

The following comments are for vendor information purposes only. The final terms will be negotiated directly between buyers and vendors.

Optional Additional comments:

--	--

Step 5: Review and Join Trade

[Join Trade](#)
[Cancel](#)

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Address [Go](#)

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my trades

future pooling **active** closed

Product	Quantity	My Max Price	Current Bid	My Standing	Times Left
Sel. IV Tubing Primary	10,000 units	\$2.20 ea	\$1.95	\$2,800.00	8 min
Sel. IV Tubing Secondary	7,500 units	\$1.30 ea	\$1.00	\$2,250.00	20 min
Sel. Filter Extension	7,498 units	\$1.80 ea	\$1.10	\$5,241.60	45 min
Gloves, Surgical-Powdered Latex	419 cs	\$82.00 cs	\$64.35	\$7,342.40	1 hr
Gloves, Surgical-Powder Free	1,040 cs	\$303.00 cs	\$280.00	\$23,920.00	4 hrs
Mask, Surgical Tie	1,000 cs	\$37.00 cs	\$43.00	-	6 hrs
Mask, Surgical For Face	897 cs	\$65.00 cs	\$53.00	\$10,764.00	8 min
Mask, Isolation	876 cs	\$32.00 cs	\$27.00	\$3,380.00	1 day
Dressing, Sterile, 4x4 2's	312 cs	\$68.00 cs	\$54.00	\$4,368.00	1 day
Dressing, NS, 8 Ply	260 cs	\$82.00 cs	-	-	1 day
Mesh, Surgical Woven 16x15 cm	260 bx	\$498.00 bx	\$470.00	\$7,000.00	2 days
Gown, Reusable Patient	650 dz	\$94.00 dz	\$72.00	\$7,800.00	3 days
Pulse Oximeter	2 units	\$1,750.00 ea	\$1,050.00	\$200.00	2 wk

Last updated 2:30 pm: Refresh Data

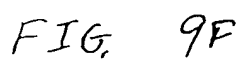
my call listed screenshot
\$74,766.00

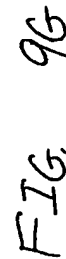
my account
my trades
product catalog
password
personalize
help
help index
faq
contact us
about us
helpdesk

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My Computer


FIG. 9E





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Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address 

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For change information: [National directory](#)

my medpool
home
my trades
product catalog
my account
passwords
personalize
help out
can we help?
help index
links
contact us
call us
1-800-555-3433

my trades future pooling active **closed**

Closed Trades > Trade Summary

Summary for Lead, Bradycardia

Vendor Contact Information

Bill Matthews
Medical Equipment Corp.
434 Bowling Green Way
San Clemente, CA 94964

Office Phone 310.321.4434
Cell Phone 718.332.9383
Fax 310.321.5632
Email bmathews@medec.com

Order Information

My Max Price \$78,000.00
Closing Price \$78,000.00
Quantity 1,500 units
Total Order \$78,000.00
My Savings \$78,000.00

Additional Comments
The following comments are for vendor information purposes only. The final terms will be negotiated directly between buyers and vendors.

Ship 400 units per month

Review Terms of Agreement **Done**

Printer Friendly Version
\$78,000.00
my trades

My Computer

FIG. 9A

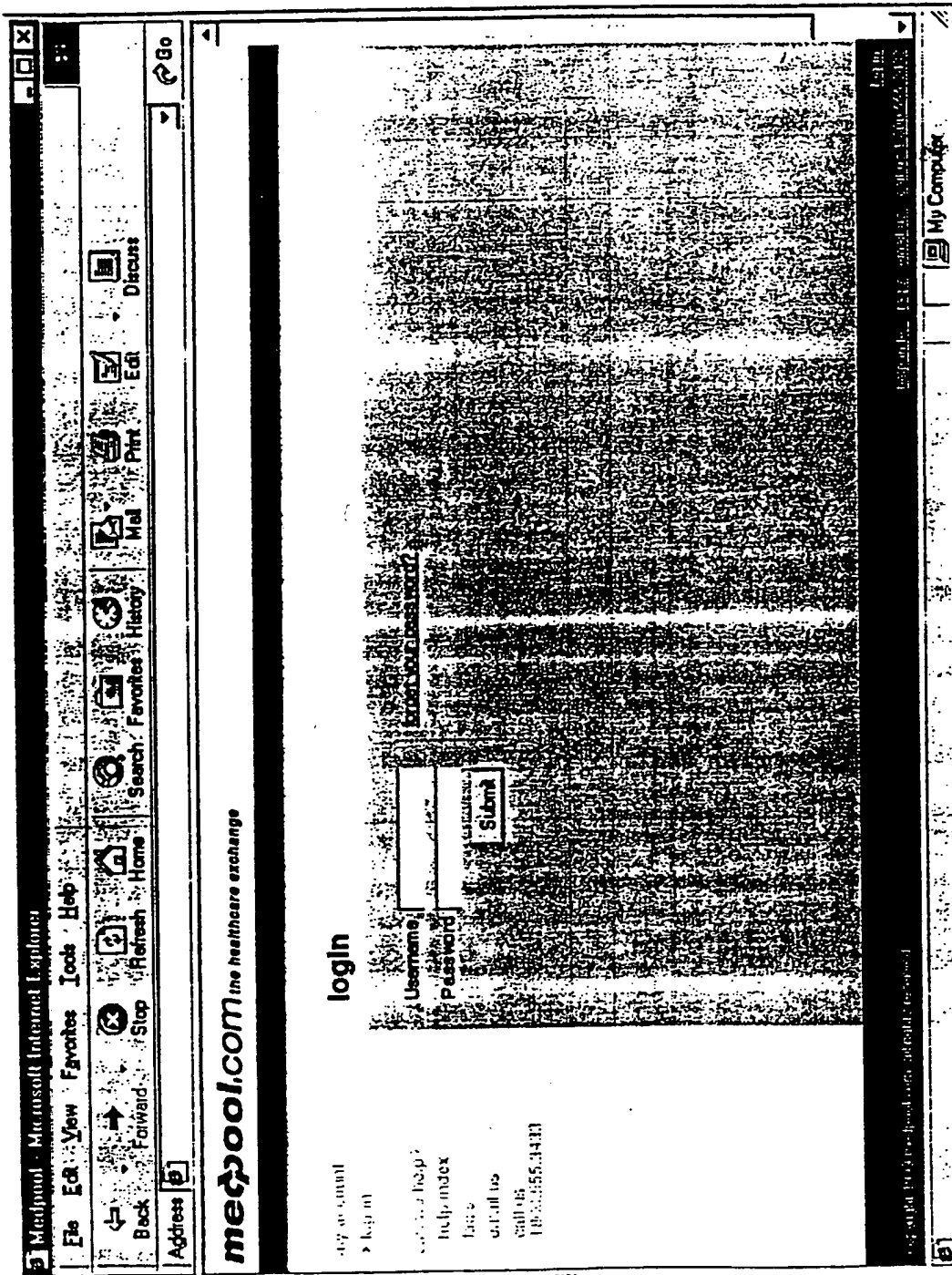


FIG 10A

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my trades

active open active closed

Product	Open Start	Open Close	Trade Start	Trade Close
Padlock Undercast 4"x4"	Sep 1	Sep 11	Sep 13	Sep 16
Foams, Ulcer	Sep 1	Sep 11	Sep 13	Sep 16
Ventilator, Continuous, Respirator	Sep 3	Sep 13	Sep 15	Sep 17
Gown, Impervious, Full Back w/Cuffs	Sep 5	Sep 15	Sep 17	Sep 18
Wrap, Compression 6" X 5'	Sep 7	Sep 17	Sep 19	Sep 20
Towel, Bath 22 X 44" 6.25lb	Sep 9	Sep 19	Sep 21	Sep 23
Dressing, Cloth Adhesive	Sep 10	Sep 20	Sep 22	Sep 23
Drawsheet 54"x81" T180	Sep 11	Sep 21	Sep 23	Sep 25
Mattress, Spring/Convuluted Foam 35" X 80" X 6"	Sep 12	Sep 22	Sep 24	Sep 25
Brushes, Scrub PCMX Solution	Sep 15	Sep 25	Sep 27	Sep 29
Towel, OR Reusable 18"x31"	Sep 20	Sep 30	Oct 2	Oct 3

Last updated 2:20 pm: Refresh Data

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My Computer

FIG. 10B

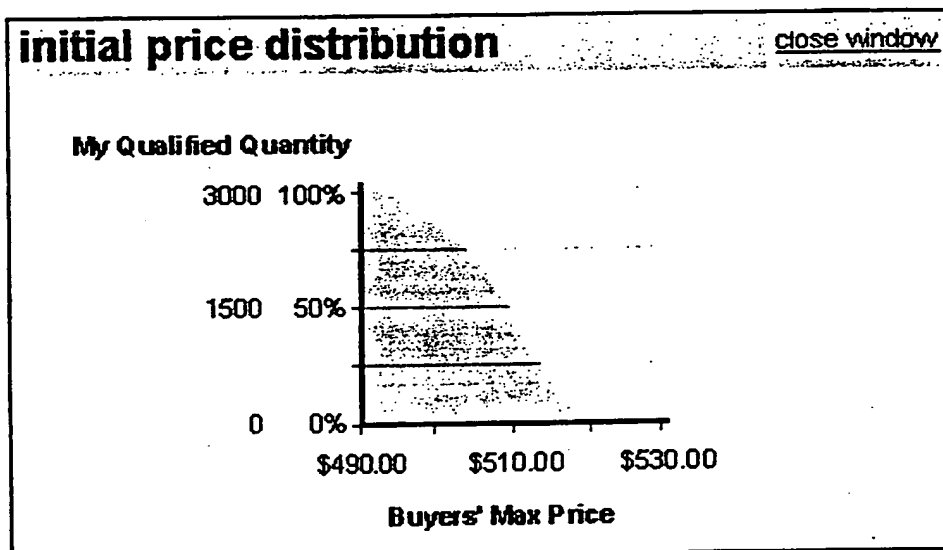


FIG. 10C

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my trades
my account
my orders
my portfolio

my account
personal
personal
personal

can we help?
help index
faq's
contact us
1800.555.3433

my trades

future's open active closed

Last updated 2:20 pm: Refresh Data

Future Trade - Join Trade
Ventilator, Continuous, Respiratory

Step 1: Review Trade Information

Open Period Ends	Sep 17, 1999	Trade Start	Sep 19, 1999, 8:00 AM PST
Total Trade Quantity	200 units	Trade Close	Sep 21, 1999, 8:00 AM PST
Freight Charges	Origin		

Qualified Quantity: 200 units
Quantity will update automatically if you conclude any buyers below.

Step 2: Review Buyer's additional comments

The following comments are for vendor information purposes only. The final terms will be negotiated directly between buyer and vendor.

Step 3: Review Buyer's additional comments

The following comments are for vendor information purposes only. The final terms will be negotiated directly between buyer and vendor.

Step 4: Create Pricing Structure

Click up to 5 times below brackets to set your price. If you want to enter only one price for any quantity, click only the 1st column.

The prices you define are per unit (1 Ventilator)

	Bracket 1	Bracket 2	Bracket 3
Quantity	0 - 50	51 - 100	101 - 250
Acquisition (Optional)	0.00	0.00	0.00
Arrival Service (Optional)	0.00	0.00	0.00
Installation (Optional)	0.00	0.00	0.00

Step 5: Review and Join Trade

Join Trade Cancel

FIG. 10D

Microsoft Internet Explorer

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For Full Features, Medical Equipment Configuration

my trades

future open active closed

Product	My Pool	Open Close	Trade Sign	Trade Close
Pump, Intra	300 units	Sep 11	Sep 13	Sep 16
Trax, Trach w/Paroxida	6000 ea	Sep 11	Sep 13	Sep 16
Ventilator, Continuous, Respirator	250 units	Sep 13	Sep 15	Sep 17
Green, Impervious, Full Back w/Cuffs	60,000 bx	Sep 15	Sep 17	Sep 18
Walker, Adult 4button	4,000 units	Sep 17	Sep 19	Sep 20

Last updated 2:20 pm: Refresh Data

my medical
my home
my trades
medical promotions
add my product
battery

my account
password
performance
help

show help?
help index
help
contact us
vendors
privacy policy

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My Computer

FIG. 10E

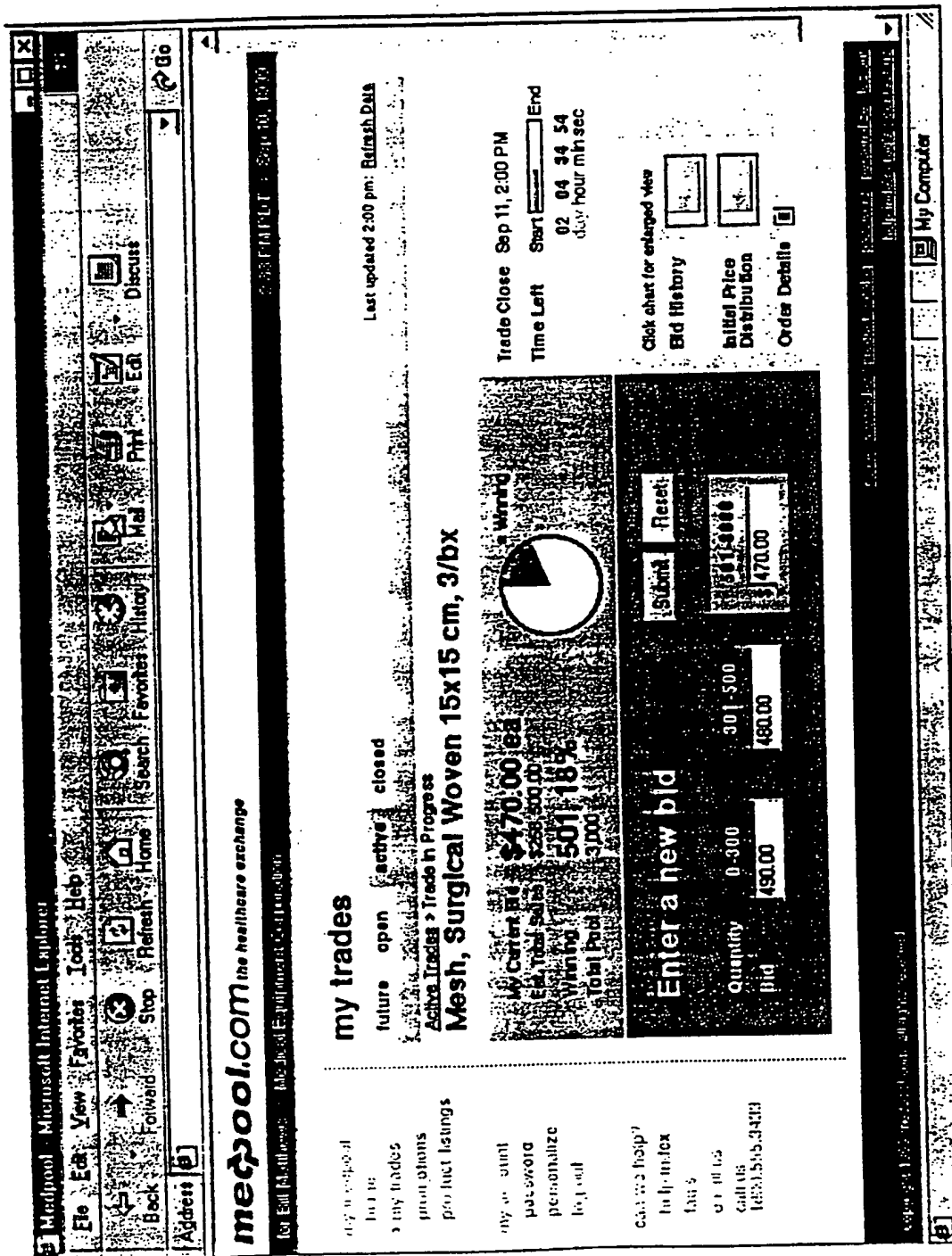


FIG. 10G

FIG. 10H

Medpool for Bill Matthews - Microsoft Internet Explorer

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Address [D:\Shared\Demo\08_30\vendor_closed_detail.html](#)

my medpool THE EXCHANGE

→ FUTURE ○ OPEN ● ACTIVE X CLOSED

Bill Matthews
Medical Equipment Corp.
Sep 30, 6:59 PM PST

Closed Trades > Trade Summary
Trade Summary for Lead, Bradycardia [Printer Friendly Version](#)

Trade Information

Total Trade Quantity	12,888 units	Trade Closed	Sep 30, 1999
My Pool	10,453 units	Freight Charges	Origin

My Results

Final Quantity Won	9,887 units	Final price per unit	\$585.88
% of My Pool Won	94.5	Total Order Price	\$3,783,893.00

Buyer Contact Information

Memorial Hospital
13 Magnolia Drive
San Marcos, TX 78666

Office: 512-378-4434
Phone: 512-378-9369
Fax: 512-378-5332
Cell Phone: 512-378-5332
Email: clanham@memorial.com

Quantity: 12,888 units
Ship Start: Jan 1, 1999
Ship End: Jan 1, 2000
Delivery: Ship Direct
Payment: Net30
Terms: (Shipping schedule, see comments)

Additional Comments:
Ship 1,000 units per month

Healthcare Systems
1533 10th Street
Albany, NY 12212

Office: 518-578-5245
Phone: 518-578-5245
Fax: 518-578-5266
Cell Phone: 518-578-5272
Email: clanham@hsh.com

Quantity: 12,888 units
Ship Start: Jan 1, 1999
Ship End: Jan 1, 1999
Delivery: Ship Direct
Payment: Net30
Terms: (Shipping schedule, see comments)

Additional Comments:
Single shipment

Joseph Whitman
3343 Cactus Road
Phoenix, AZ 85023

Office: 602-278-3389
Phone: 602-278-4886
Fax: 602-278-4886
Cell Phone: 602-278-4886
Email: jwhitman@mercy-general.com

Quantity: 2,000 units
Ship Start: Oct 1, 1999
Ship End: Nov 1, 1999
Delivery: Distributor
Payment: Net30
Terms: (Shipping schedule, see comments)

FIG. 10 I

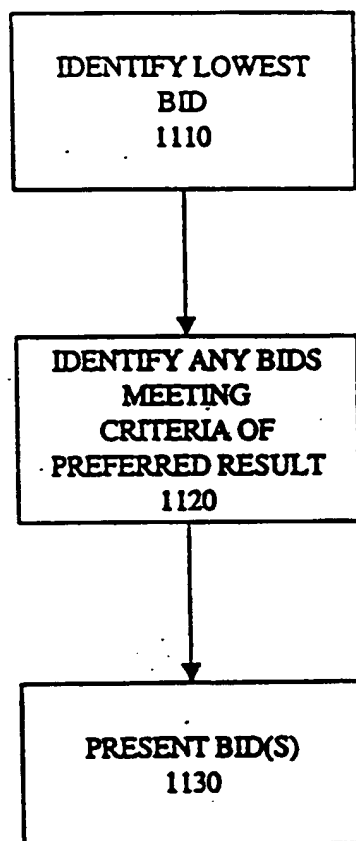


FIG. 11

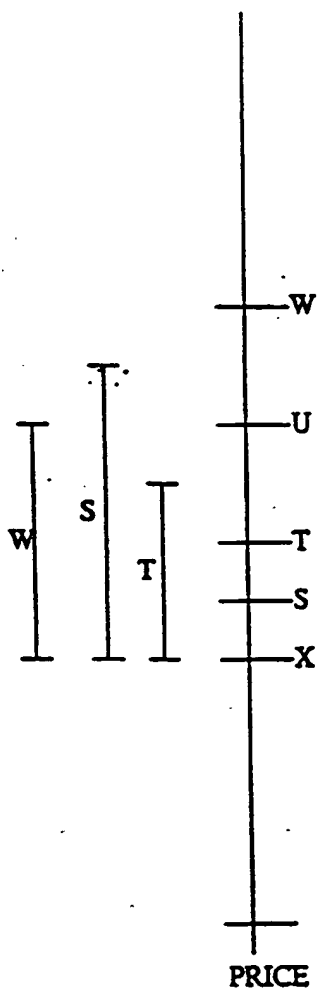


FIG. 12A

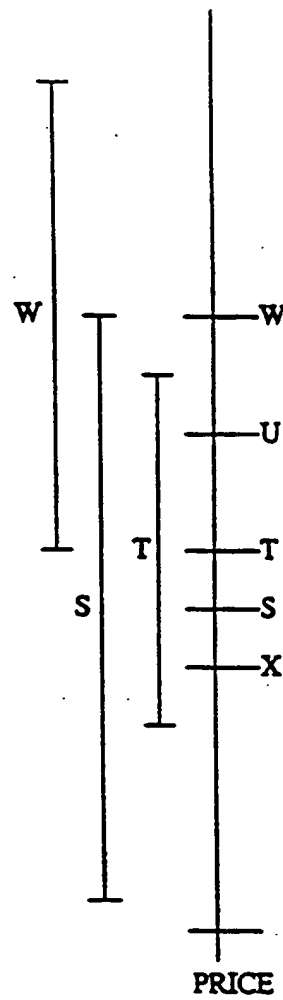


FIG. 12B

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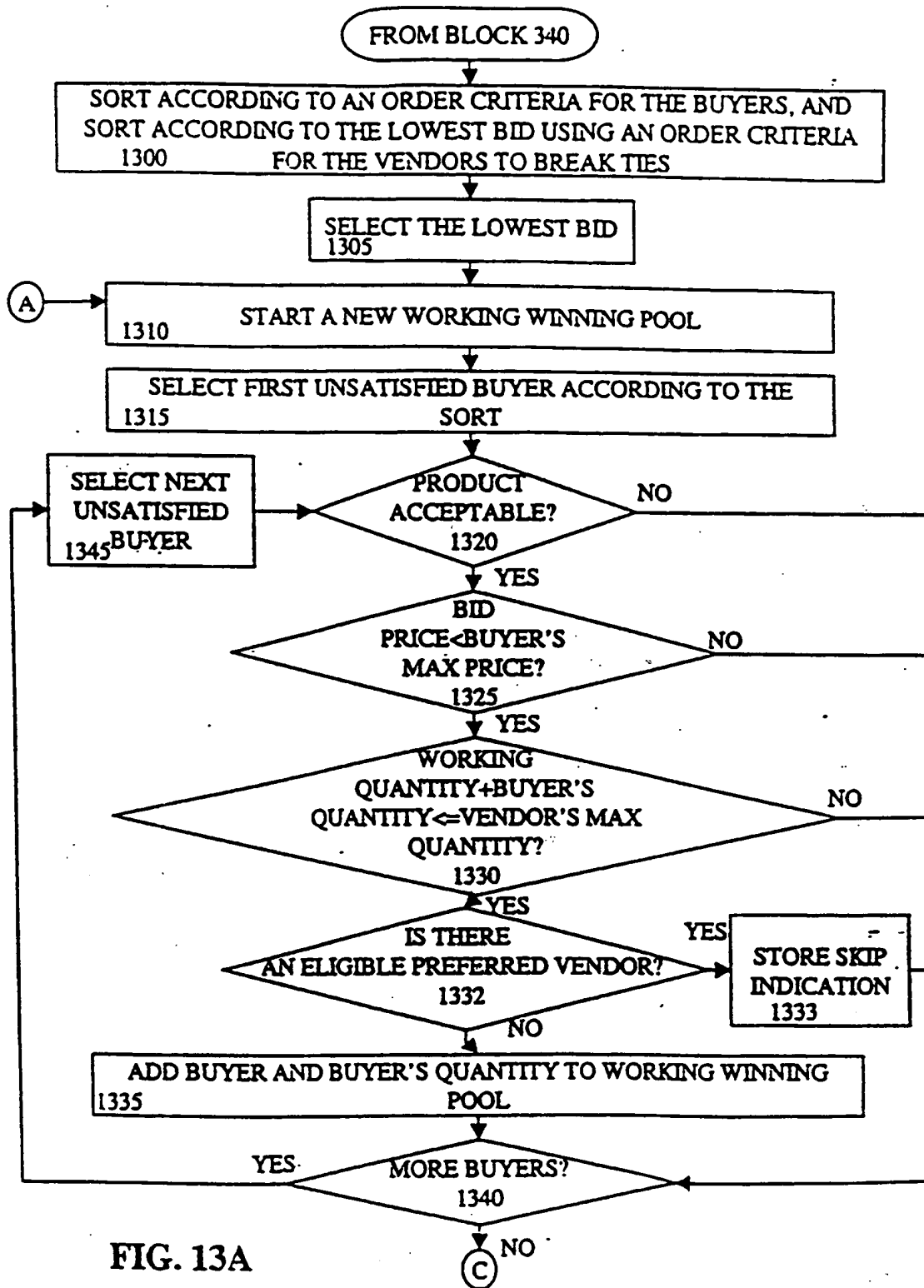
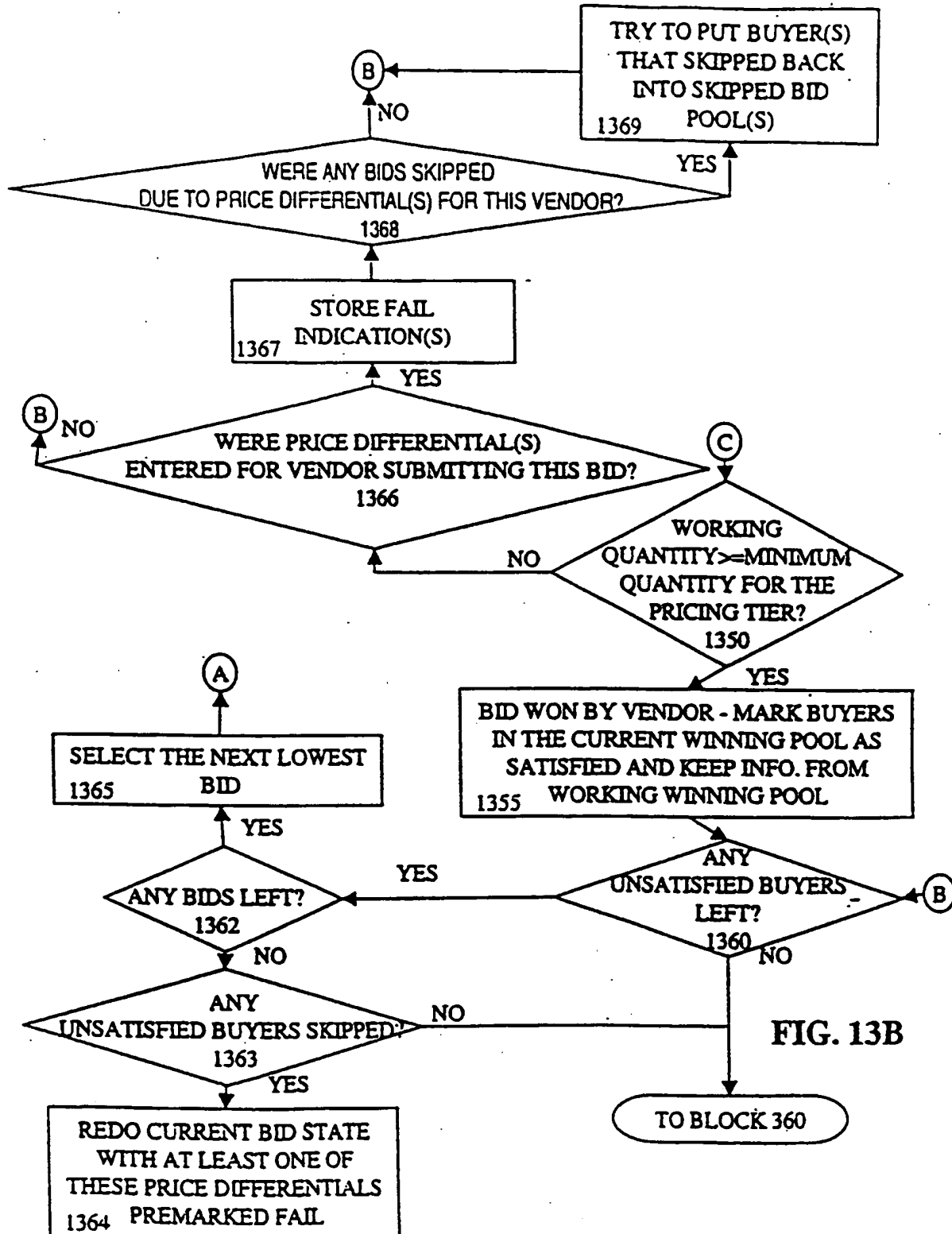


FIG. 13A



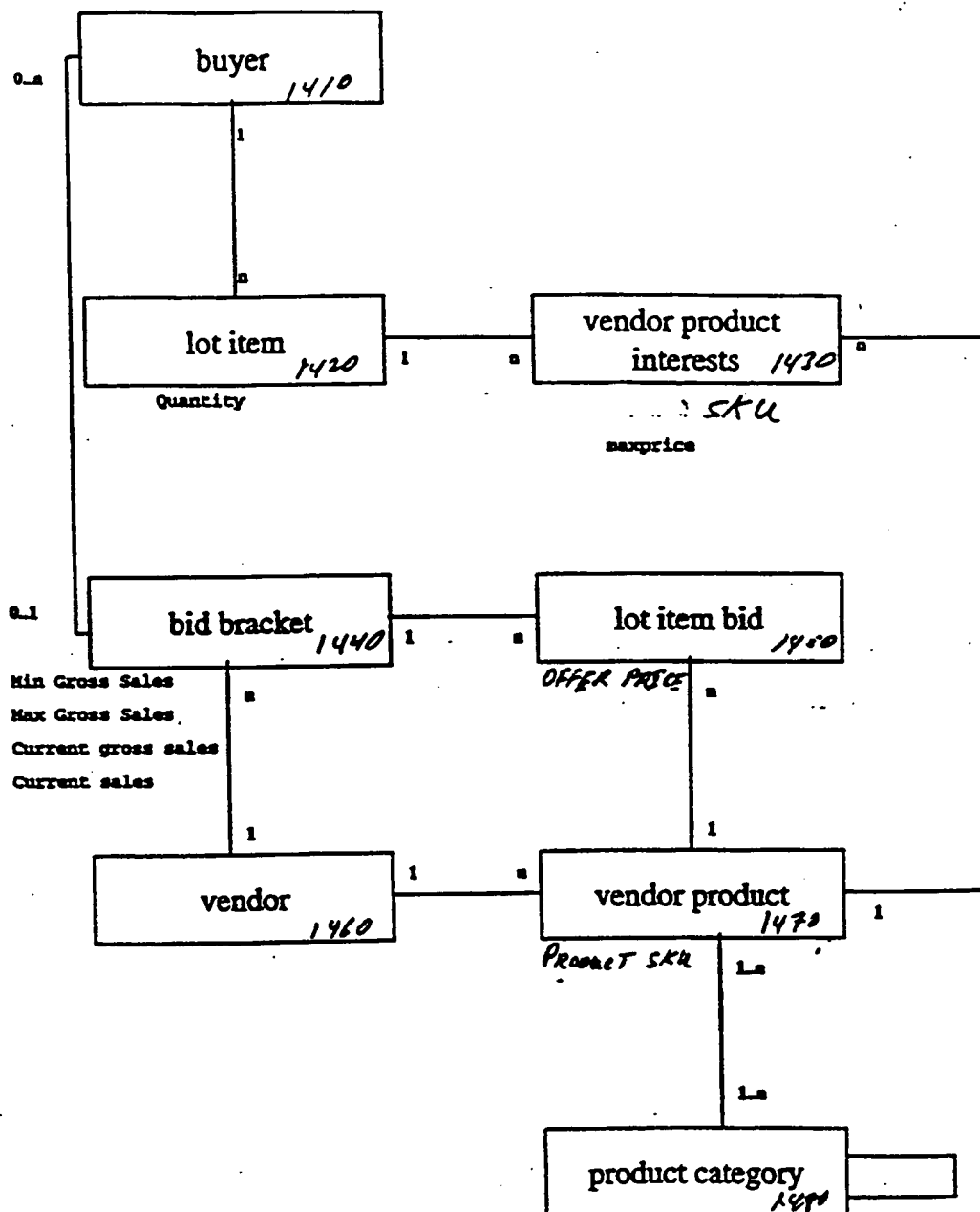


Fig. 14

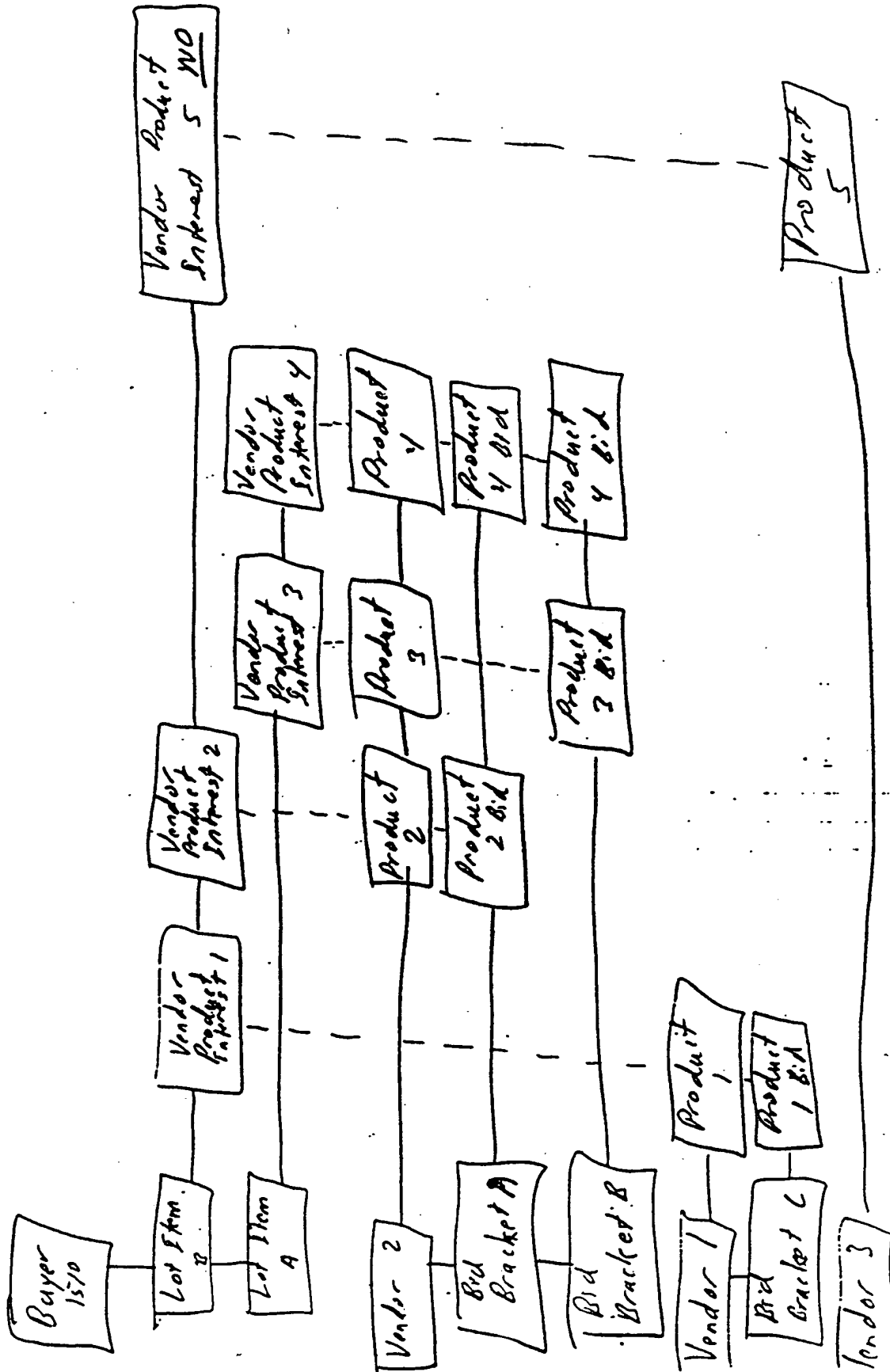


Fig. 15

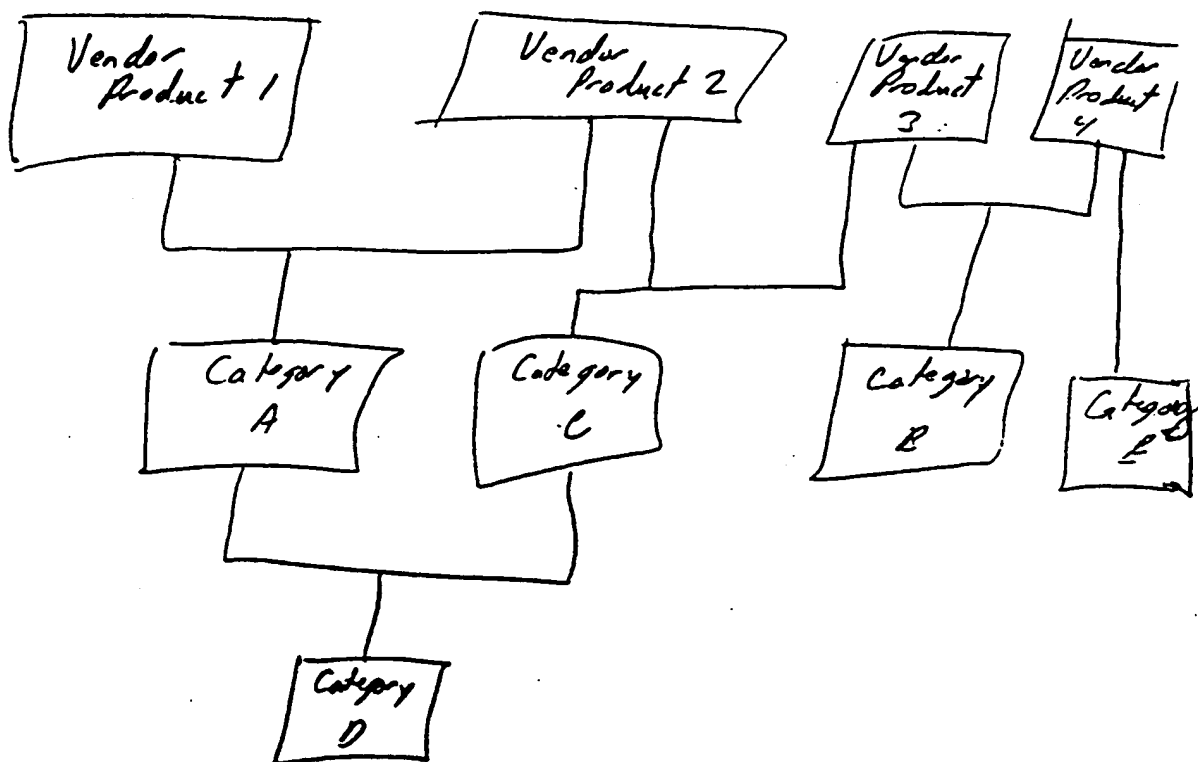


Fig. 16

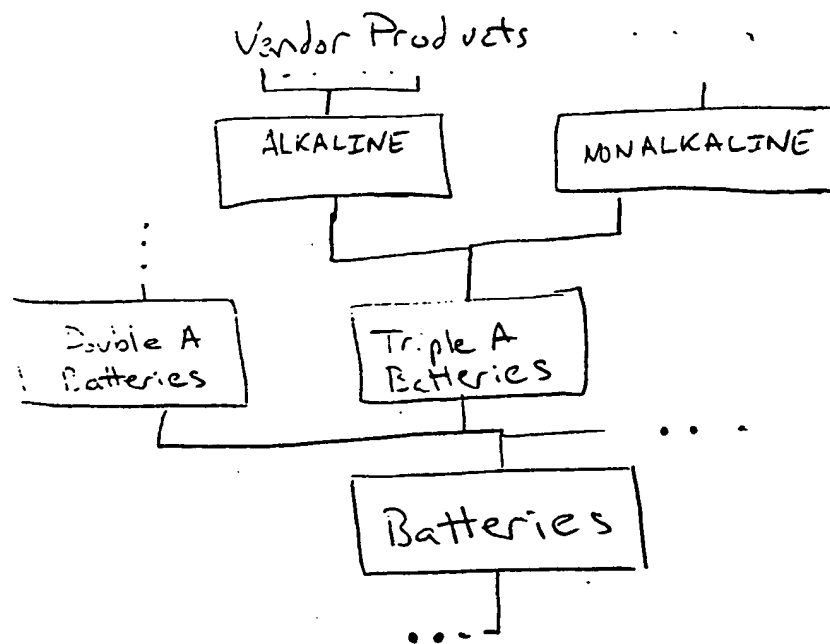


Fig. 17

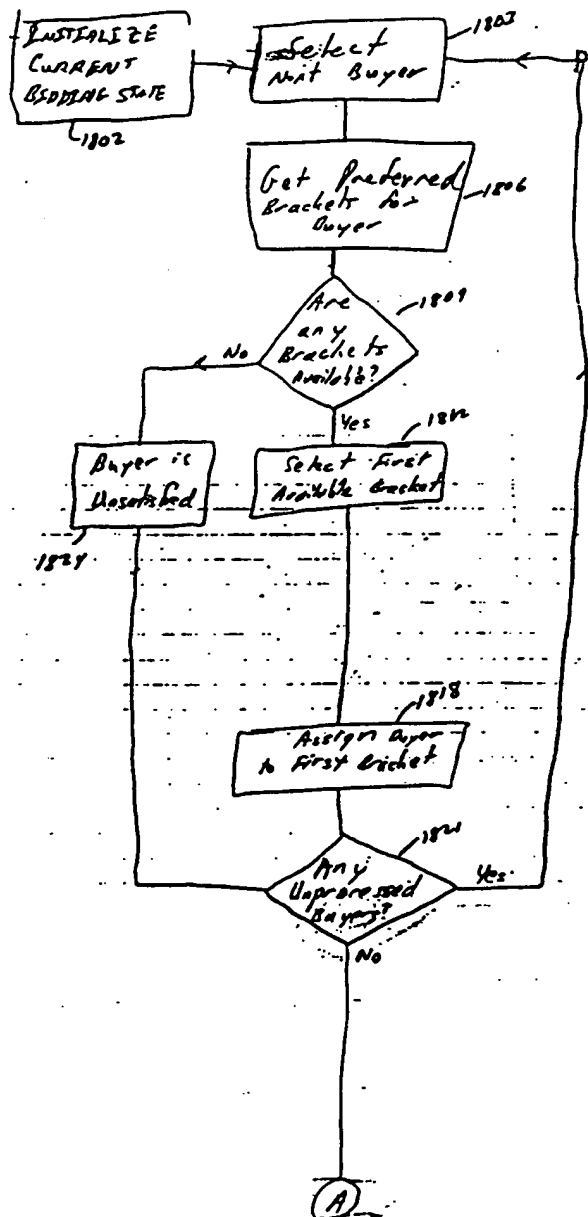
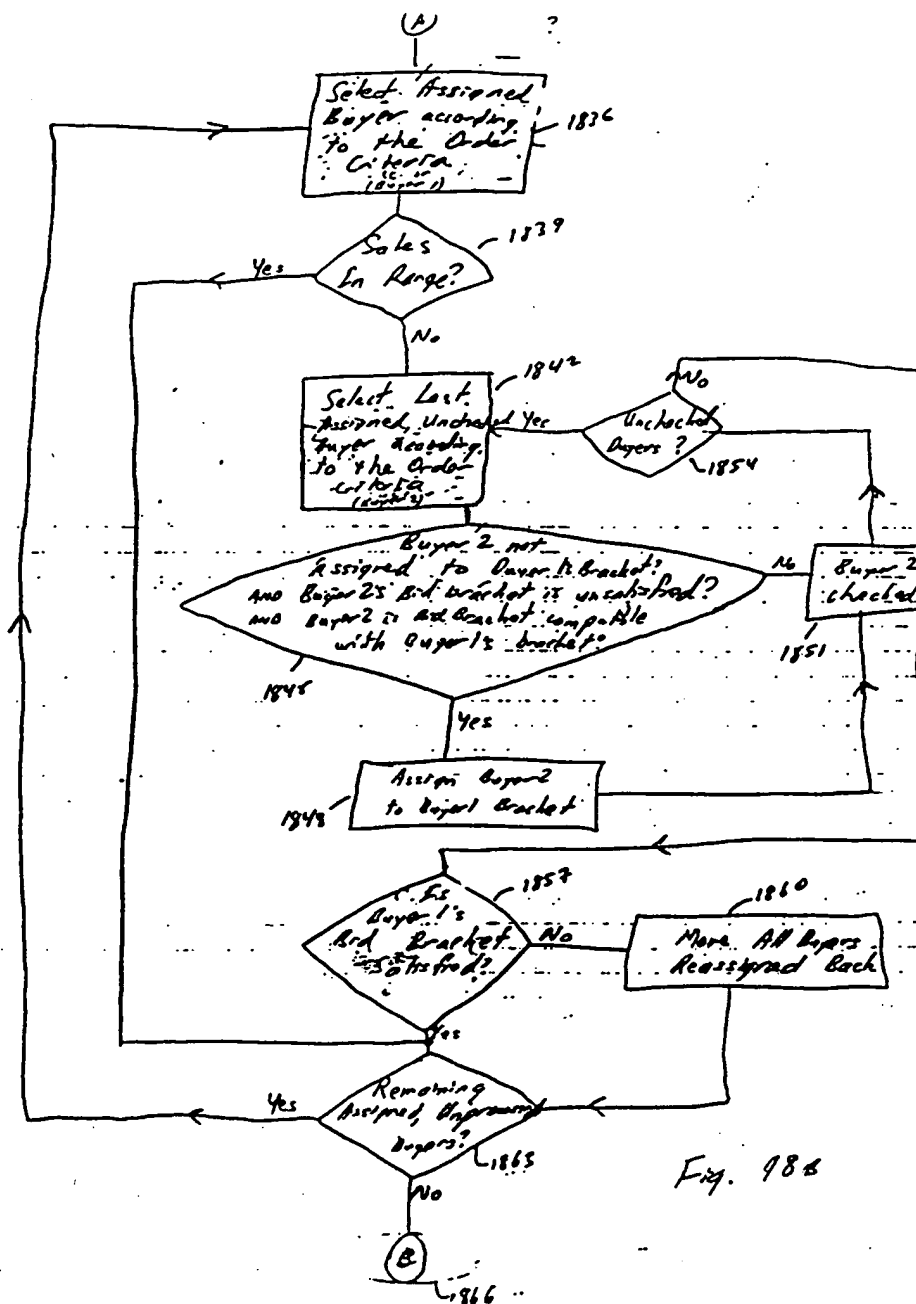
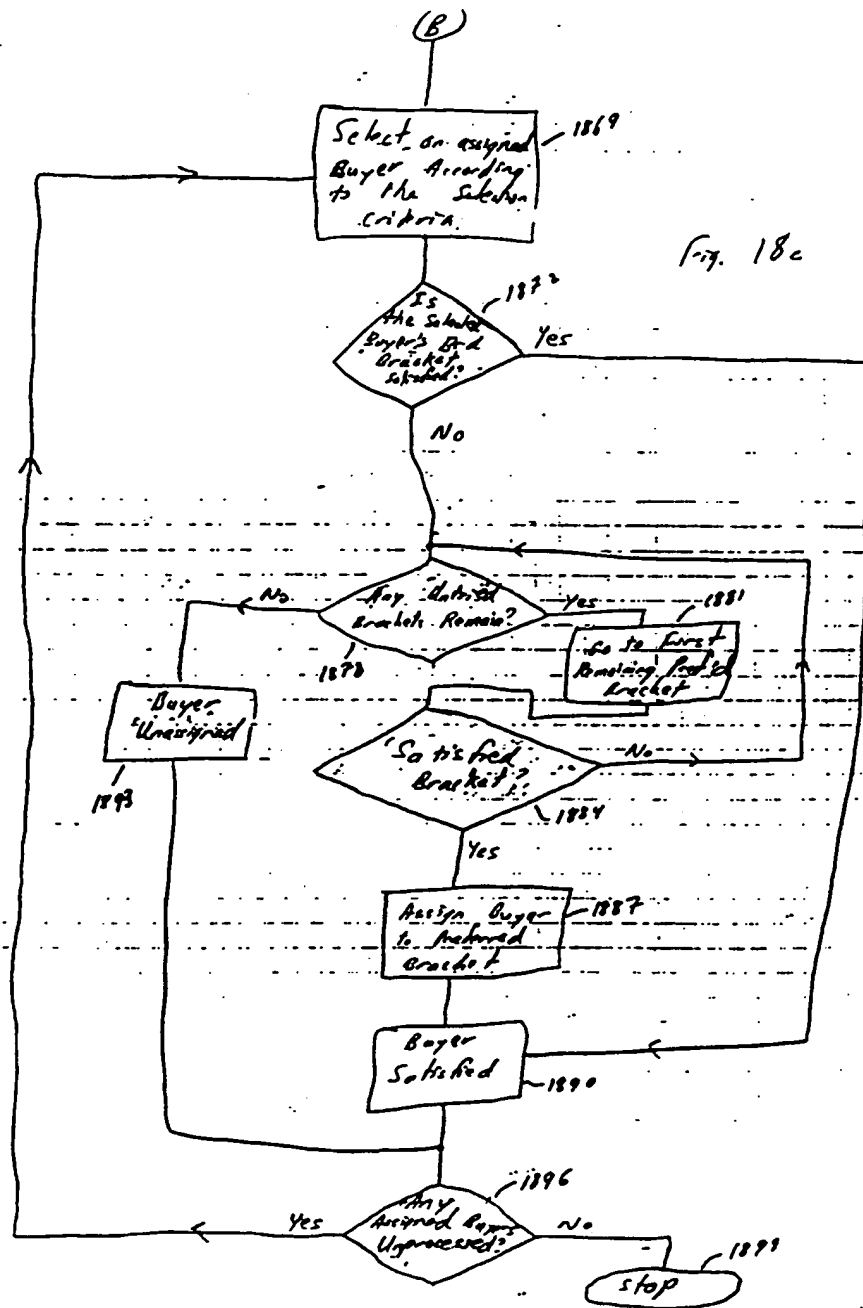


Fig. 18A





Compatibility List

Vendor	Buyer
1	D
2	B
2	D
3	A
3	C
4	A
4	D

1960

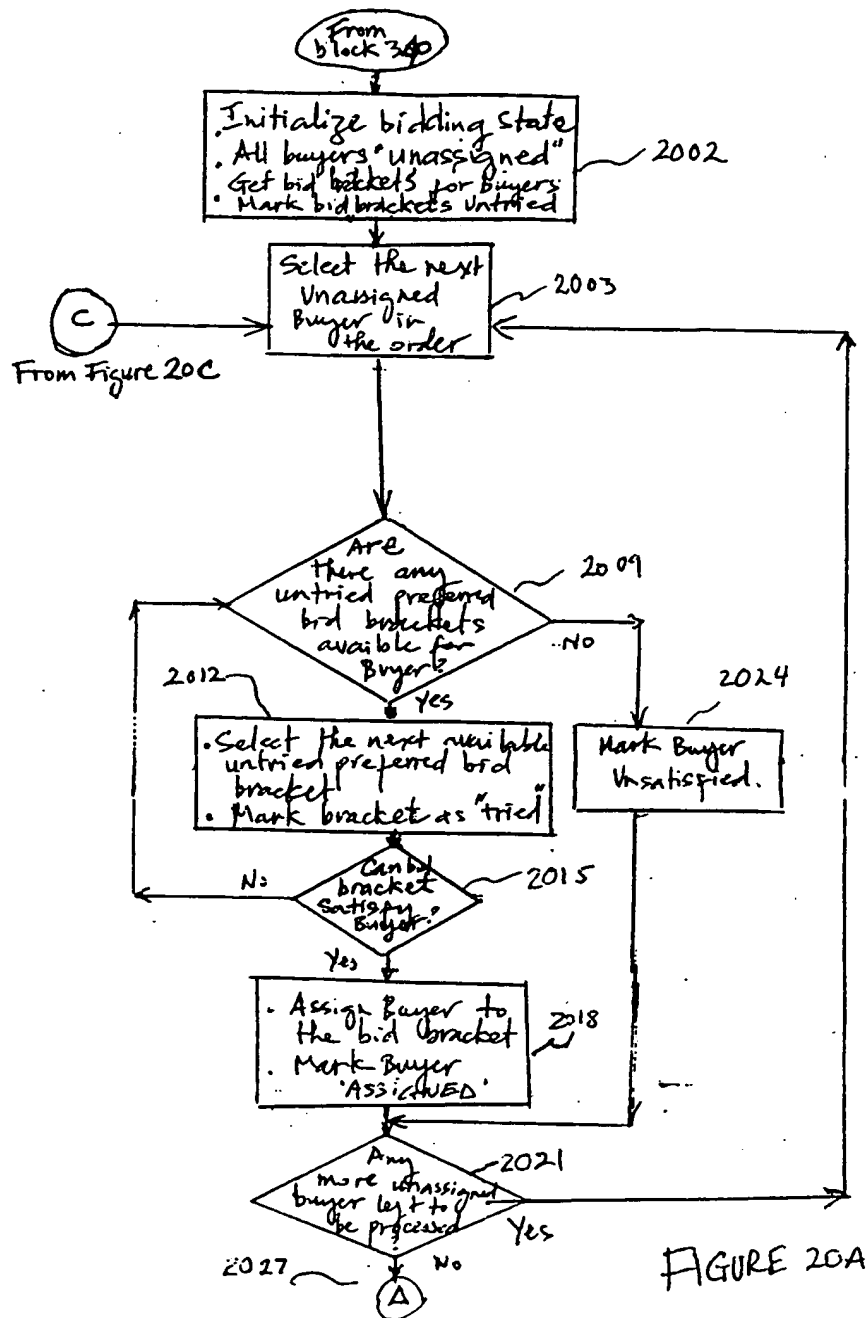
Fig. 19A

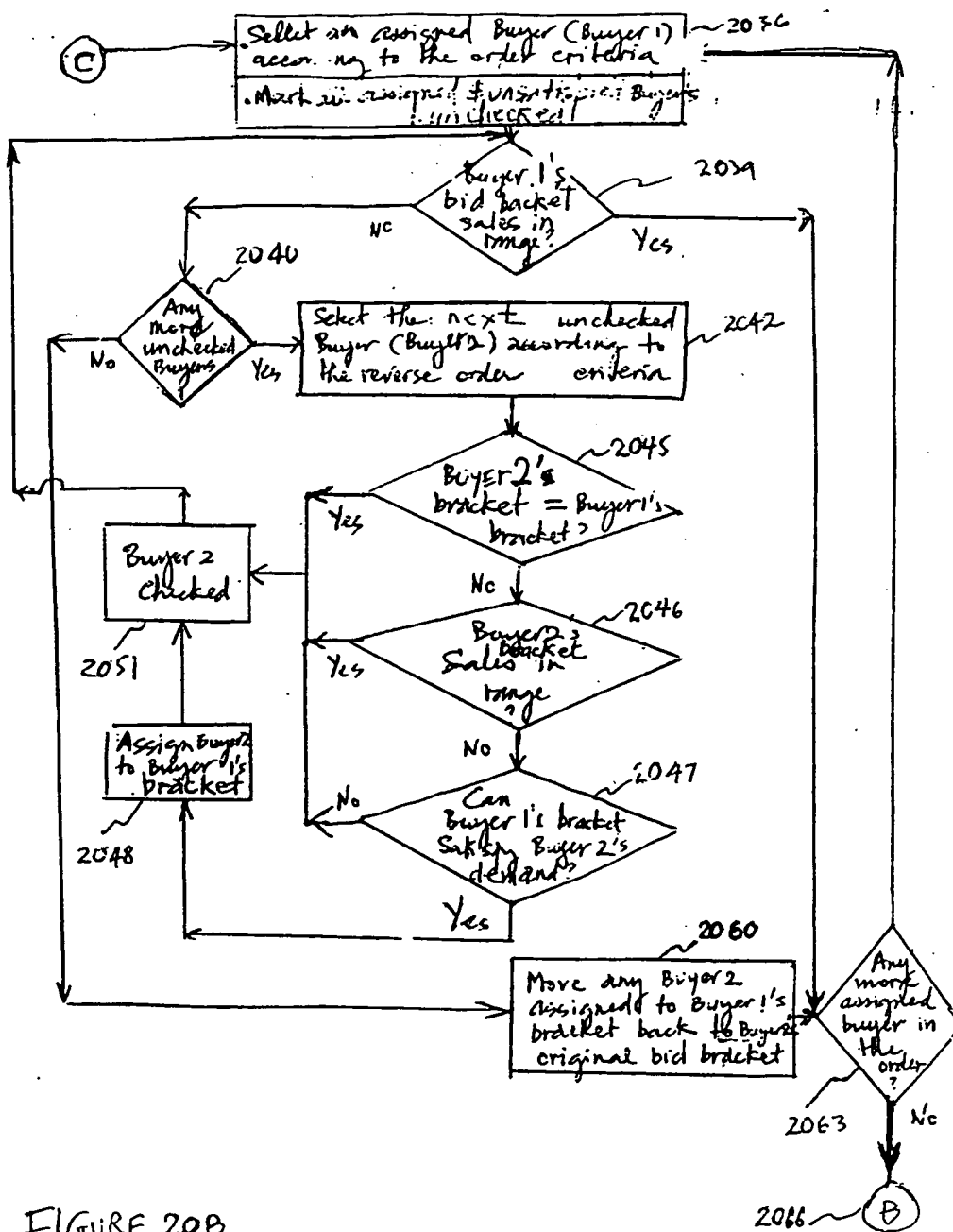
Compatibility Matrix

Vendor	A	B	C	D
1				x
2		x		x
3	x		x	
4	x			x

Fig. 19B

1970





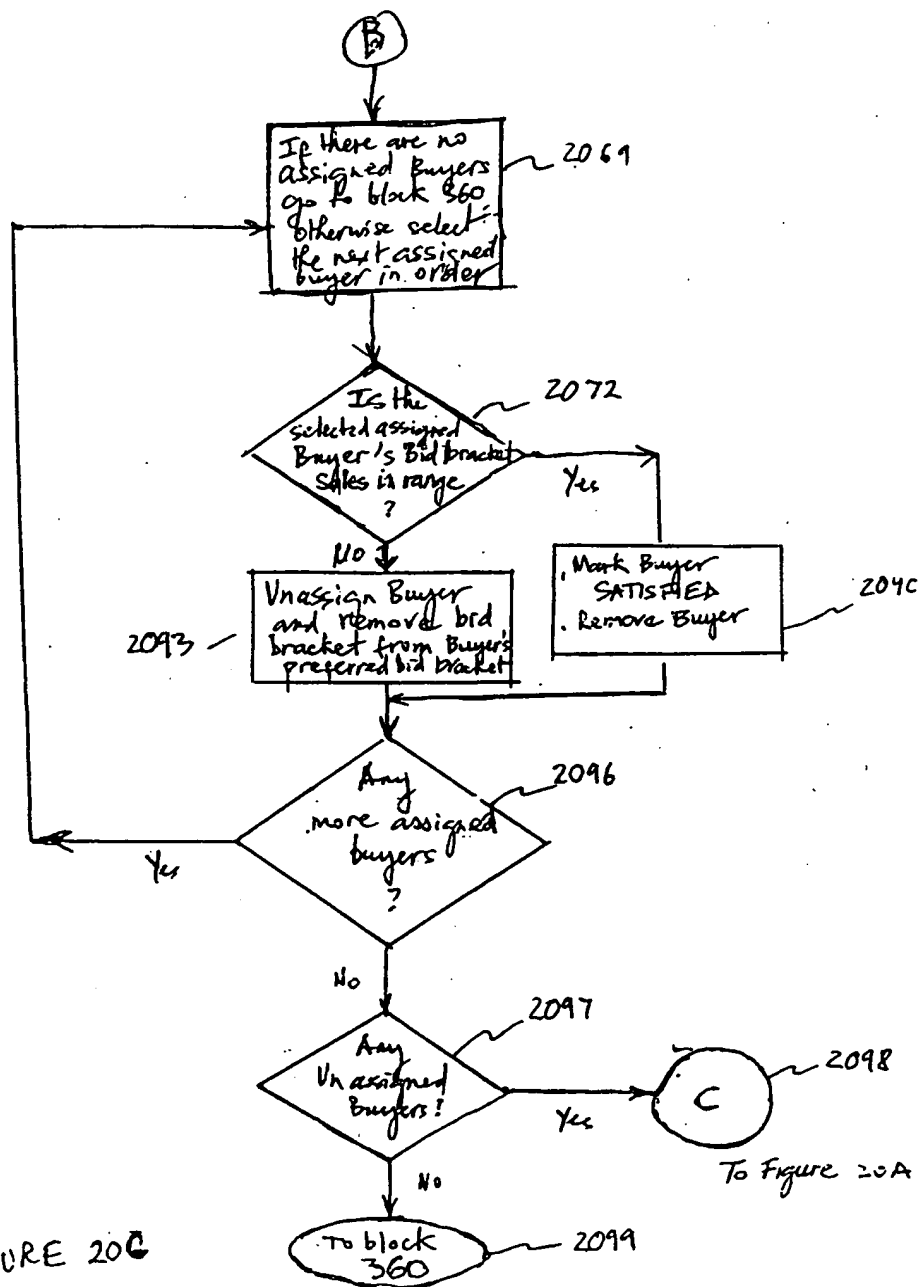


FIGURE 20C